Mini System FW570C/21/21M/22/37

Service
Service
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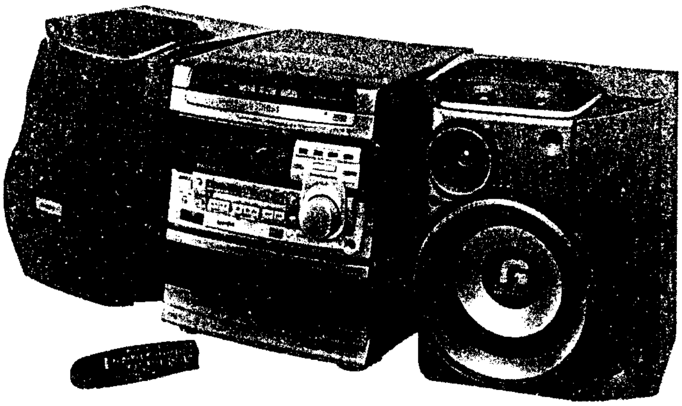

Service Manual

COMPACT disc DIGITAL AUDIO

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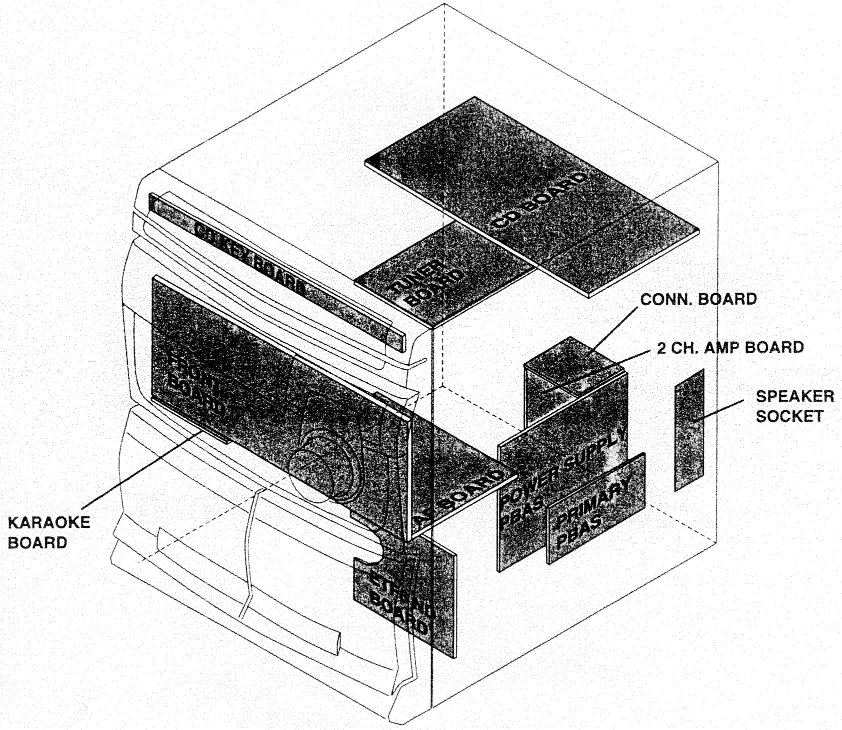
CLASS 1
LASER PRODUCT

GB 4822 725 2579

PCS 100 058

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Versions: / Features & Board in used:	/21 /21M	/22	/25	/26	/30	/33	/34	/37
Aux Input	x	x						x
Line Output	x	x						x
Subwoofer Output	x	x						x
Surround Output								
Digital Output								
Dolby B								
RDS		x						
CD Text								
Karaoke Feature	x							
Tuner board - ECO5 Sys	x							x
Tuner board - Tuner 95		x						

SPECIFICATIONS

GENERAL:

Mains voltage : 100V for /26
110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30

Mains frequency : 50/60Hz
Power consumption : < 15W at clock mode FTD on
< 85W at 1/8 rated power out
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 380mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75ohm coaxial
300ohm click fit for /37
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 50dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3% [< 2%]
-3dB Limiting point : < 7µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB [> 26dB]

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5% [< 7%]

LW

Tuning range : 153-279kHz
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 26dB]
Image rejection : [> 35dB]
Distortion at RF=50mV, m=80% : [< 7%]

AMPLIFIER:

Output power (6 ohm, 1kHz, 10% THD) : 2 x 100W ± 1dB

Frequency response within -3dB : 60Hz-16kHz
Dynamic Bass Boost : BEAT, PUNCH, BLAST, DBB Off 1)
Digital Sound Control : Classic,Rock,Techno,Optimal,Jazz 1)
Incredible Surround : IS ON , IS Off 1)

Headphone output at 33 ohm max. vol. : 0.9V ± 1dB
Input sensitivity
Aux/Line-in : 350mV ± 2dB at 600 ohm
Mic (For simple karaoke only) : 2.5mV ± 2dB at 600 ohm
Output sensitivity
Line-out : 500mV ± 2dB at 22 kohm
Sub-woofer (max. vol.) : 1.5V ± 2dB at 22 kohm

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec ± 2%
1.6 x 4.76 cm/sec
Wow and flutter : < 0.4% DIN
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to noise ratio (IEC I) : > 44dB
Signal to noise ratio (IEC II) : > 47dB

COMPACT DISC:

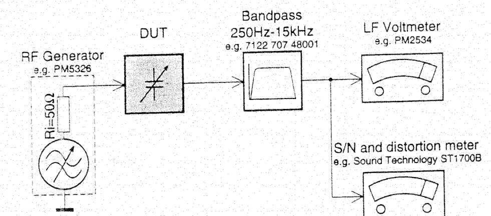
Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV ± 2dB unloaded
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.5%
Channel difference at 1kHz : < 1dB
Channel crosstalk at 1kHz : > 45dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[....] Values indicated are for "Tuner 95 Board" only

1) Frequency response in each setting is software controlled.

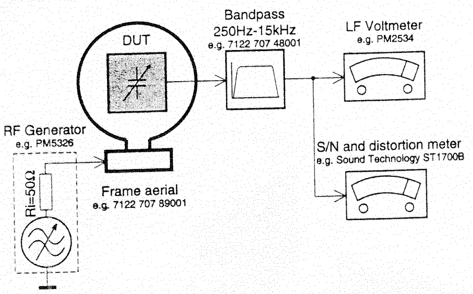
MEASUREMENT SETUP

Tuner FM


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

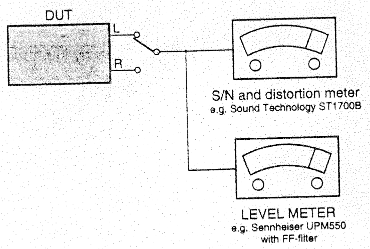
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

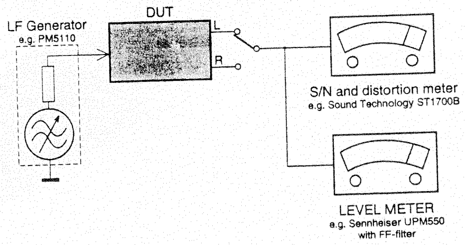
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

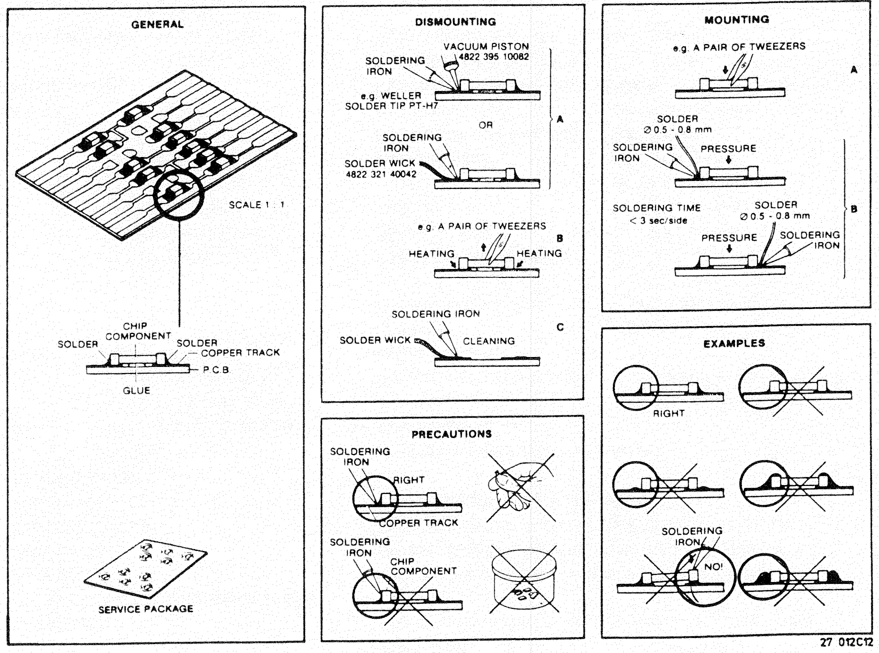
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS


GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER
SOLDER TIP PT-H7
OR
SOLDERING IRON
SOLDER WICK
4822 321 40042
A
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
C
SOLDER WICK
CLEANING
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
⌀ 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
< 3 sec/side
SOLDER
⌀ 0.5 - 0.8 mm
B
PRESSURE
SOLDERING IRON
EXAMPLES
RIGHT
SOLDERING IRON
NO!
27 012C12

ESD

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 119 03420

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

GENERAL INFORMATION

SAFETY INFORMATION

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***

Environmental Information

All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easily separable into three mono-materials: cardboard (box), polystyrene foam (buffer) and polythene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Accessories (Supplied)

- Remote control
- Batteries (2 x AAA size) for remote control
- AM loop antenna
- FM antenna wire
- AC power cord

Accessories (Recommended)

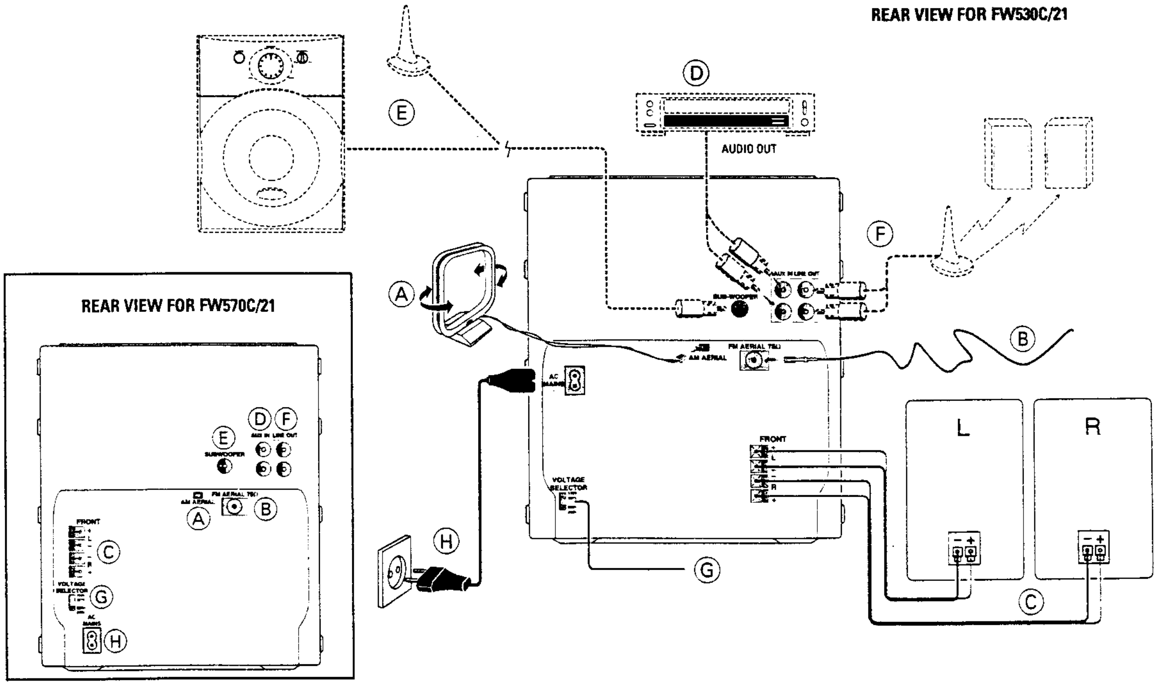
- Philips FB 201 active subwoofer.
- Philips FB 202W wireless active subwoofer.

Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The type plate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

PREPARATION

Rear Connections



Ⓐ AM Antenna Connection

Connect the supplied loop antenna to the AM AERIAL terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

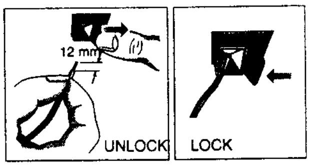
Ⓑ FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna
For better FM stereo reception connect an outdoor FM antenna to the FM AERIAL 75 Ω terminal using a 75 Ω coaxial wire.

Ⓒ Speaker Connections

- Connect the right speaker to Front terminal R, with the red wire to + and the black wire to –.
- Connect the left speaker to Front terminal L, with the red wire to + and the black wire to –.
- Clip the stripped portion of the speaker wire as shown.



Ⓓ Connecting other equipment to your system

You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc or DVD player to the AUX IN terminal at the rear of the system.

Ⓔ Subwoofer Out Connection

You can connect either an optional active subwoofer (recommended model FB 201) or an optional wireless active subwoofer (recommended model FB 202W) to the SUBWOOFER OUT terminal. The wireless system uses a radio frequency transmitter. The subwoofer reproduces just the low bass effect (e.g. explosions, the rumble of spaceships, etc.). Be sure to follow the instructions supplied with the subwoofer.

Ⓕ Line Out *(wireless ready)*

You may install additional front active speakers away from the system (e.g. in another room) to reduce the inconvenience of running long speaker wires across rooms. You can place as many remote speakers as you like provided that they operate at the same radio frequency. Connect the wireless radio frequency transmitter to the LINE OUT terminals. Place the active speakers at your preferred location. Be sure to follow the instructions supplied with the active speakers.

Note:
- *Availability of wireless transmitter and its peripherals are subjected to the approval of local authorities. Please check with respective local safety or approving authority.*

Ⓖ Adjusting the Operating Voltage

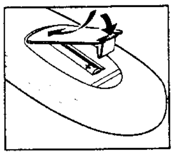
(not available for version /30)

Before connecting the AC power cord to a wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.

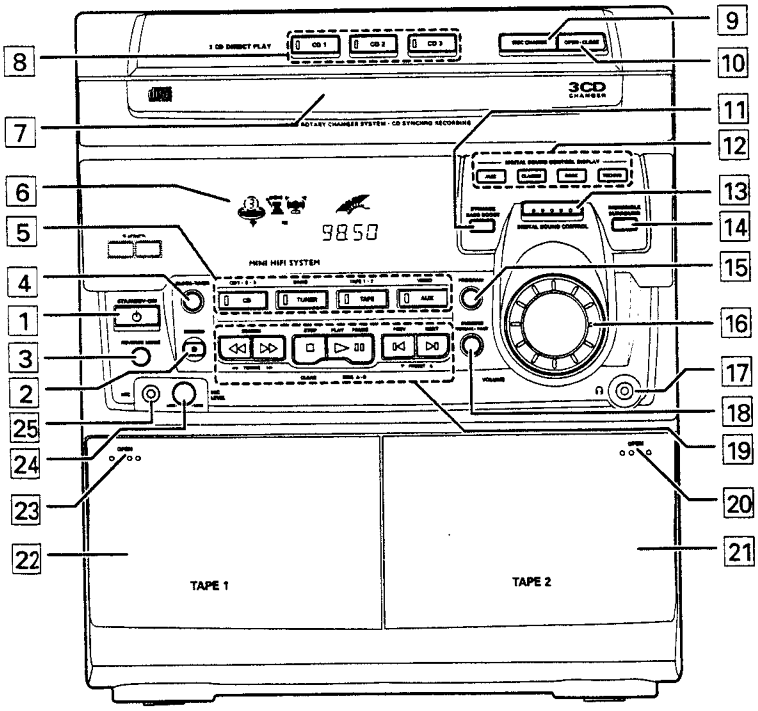
Ⓗ AC Power Supply

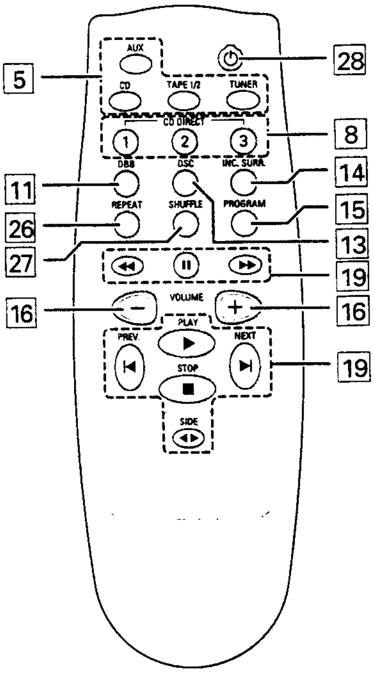
After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

Inserting batteries into the Remote Control



- Insert the batteries (Type R03 or AAA) into the remote control as shown in the battery compartment.
- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R03 or AAA batteries.





CONTROLS

Controls on the system and remote control

1. **STANDBY•ON**
   - to switch the system on or to standby mode.
   - to store radio stations automatically by pressing and holding for 2 seconds *(only in Standby or Demonstration mode)*.
2. **RECORD**
   - to start recording on tape deck 2 only.
3. **REVERSE MODE**
   - to select the different playback mode on tape deck 2 only.
4. **CLOCK•TIMER**
   - to view clock, set clock or timer.
5. **SOURCE SELECTION**
   - to select the following:

CD (CD 1•2•3)	to select CD mode. When in CD stop mode; to select respective disc tray.
TUNER (BAND)	to select Tuner mode. When in Tuner mode; to select the waveband: FM or MW.
TAPE (TAPE 1•2)	to select Tape mode. When in tape stop mode; to select either tape deck 1 or tape deck 2.
AUX (VIDEO)	to select external source (e.g. DVD, TV, Laser Disc or VCR sound).

6. **DISPLAY**
   - to view the current setting of the system.
7. **CD CAROUSEL TRAY**
8. **3 CD DIRECT PLAY**
   - to select a CD tray for playback.
9. **DISC CHANGE**
   - to change CD(s).
10. **OPEN•CLOSE**
    - to open or close the CD carousel tray.
11. **DYNAMIC BASS BOOST (DBB)**
    - to select bass boost level (Beat, Punch, Blast).
12. **DIGITAL SOUND CONTROL DISPLAY PANEL**
    - to view the selected DSC setting.
13. **DIGITAL SOUND CONTROL (DSC)**
    - to select the desired sound effect : OPTIMAL, JAZZ, CLASSIC, ROCK or TECHNO.
14. **INCREDIBLE SURROUND**
    - to switch on or off the surround sound effect.
15. **PROGRAM**
    - to program CD tracks in CD mode or preset radio stations in tuner mode.
16. **VOLUME**
    - to adjust the volume level.
17. **HEADPHONES** 🎧
    - to connect headphones jack.
18. **DUBBING**
    - to dub a tape in normal or high speed.
19. **MODE SELECTION**

◀◀ SEARCH ▶▶ (◀◀ TUNING ▶▶)

for CD	to search backward/forward.
for TUNER	to tune to a lower or higher radio frequency.
for TAPE	to rewind or fast forward on tape deck 2 only.

STOP ■ (CLEAR)

for CD	to stop CD playback or clear a program.
for TUNER	to stop programming.
for TAPE	to stop playback or recording.

PLAY ▶ / PAUSE ❚❚ (SIDE A•B)

for CD	to start or interrupt playback.
for TAPE	to start playback; When playing in tape 2 mode, to change side.

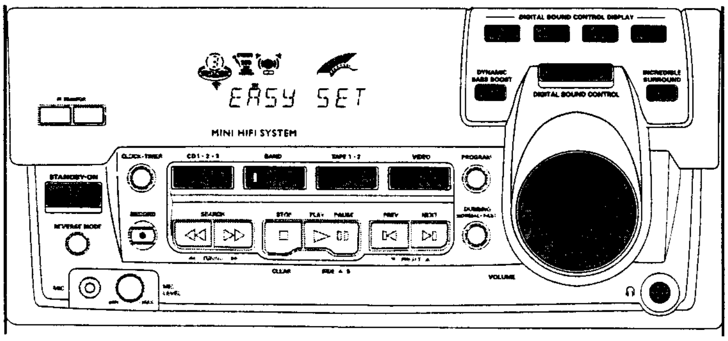
PREV ◀◀ / NEXT ▶▶ (▼ PRESET ▲)

for CD	to skip to the beginning of the current or previous/next track.
for TUNER	to select a preset radio station in memory.

20. **OPEN**
    - to open tape deck 2.
21. **TAPE DECK 2**
22. **TAPE DECK 1**
23. **OPEN**
    - to open tape deck 1.
24. **MIC LEVEL** *(not available for version /30)*
    - to adjust the mixing level for karaoke or microphone recording.
25. **MIC** *(not available for version /30)*
    - to connect microphones jack.
26. **REPEAT**
    - to repeat a CD track.
27. **SHUFFLE**
    - to play all the available discs and their tracks in random order.
28. ⏻
    - to switch the system to standby mode.

Notes for remote control:
- *First select the source you wish to control by pressing one of the source select buttons on the remote control (e.g. CD, TUNER, TAPE 1/2 or AUX).*
- *Then select the desired function (PLAY, NEXT, etc.).*

OPERATING THE SYSTEM



Important:
Before you begin operating the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***Whenever the system is switched on from the wall socket, the demonstration mode will start automatically.***

Notes:
- *During demonstration mode, if you press any source (or standby-on) button, the system will switch to the respective (or standby) mode.*
- *When the system is switched to standby mode, 5 seconds later, the demonstration mode will begin again.*

To cancel demonstration mode
- Press and hold **STOP ■** *(on the system only)* for ***3 seconds*** to stop the demonstration.
  → The demonstration mode will be switched off permanently.

Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations in a particular band (FM•MW) automatically (see Easy Set under Tuner).

Switching the system ON

- Press **STANDBY•ON** *(on the system only)*, **CD**, **TUNER**, **TAPE** or **AUX**.

You can also switch on the system by pressing any one of the 3 CD DIRECT PLAY buttons.

Switching the system to standby mode

- Press **STANDBY•ON** again.

Selecting the Source

- Press the respective source selection button: **CD**, **TUNER**, **TAPE** or **AUX**.
  → The display indicates the selected source.

Note:
- *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals.*

Sound Control

VOLUME ADJUSTMENT

Adjust **VOLUME** to increase or decrease the sound level.

For Personal Listening

Connect the headphones plug to the 🎧 socket at the front of the system. The speakers will be muted.

INCREDIBLE SURROUND

Normal stereo sound is determined by the distance between the front speakers. When Incredible Surround is switched on, it magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect.

- Press **INCREDIBLE SURROUND** to switch on.
  → The INCREDIBLE SURROUND button lights up.
  → "IS" will be displayed.

To switch off Incredible Surround

- Press **INCREDIBLE SURROUND** again.'
  → The INCREDIBLE SURROUND button light is switched off.
  → "IS OFF" will be displayed.

DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to enjoy special sound effects that have preset equalizer settings, providing the best music reproduction.

- Press **DIGITAL SOUND CONTROL (DSC)** to select **OPTIMAL, JAZZ, CLASSIC, ROCK** or **TECHNO**.
  → The Digital Sound Control display panel will light up respectively. At OPTIMAL setting, the DSC display panel does not light up.
  → "OPTIMAL, JAZZ, CLASSIC, ROCK or TECHNO" will be displayed.

Automatic DSC-DBB selection

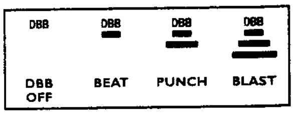
The best setting for the DBB is automatically generated for the respective DSC selection. You can also manually select the DBB setting that best suits your listening environment.

DSC Selection		DBB Selection
Optimal	←——→	Punch
Jazz	←——→	Punch
Classic	←——→	Beat
Rock	←——→	Blast
Techno	←——→	Blast

DYNAMIC BASS BOOST (DBB)

The DBB mode enhances the bass response.

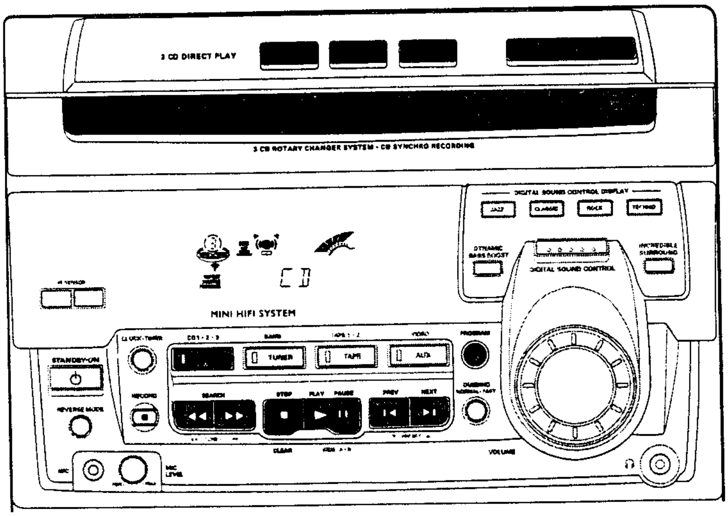
- Press **DBB** briefly to select the various level of bass boost.
  → The DBB button lights up.
  → "BEAT, PUNCH or BLAST" will be displayed.



To switch off DBB

- Press **DBB** briefly until the DBB button light is switched off.
  → "DBB OFF" will be displayed.

Note:
- *Some CDs or tapes might be recorded in high modulation. It may cause distortion at high volume. If this occurs, switch off Incredible Surround (if available), DBB level or reduce the volume.*



Warning!

1) This system is designed for conventional CDs. Do not use any accessories like disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.

2) Do not load more than one disc into each tray.

3) When the CD changer is loaded with CD(s), do not turn over or shake the system. This may jam the changer.

You can load up to three discs in the CD changer for continuous playback without interruption.

Loading the CD Changer

1 Press **CD** to select CD mode.
2 Press **OPEN•CLOSE**.
  → The CD compartment slides out.
3 Load a CD with the printed side up in the right tray.
- You can load another disc in the left tray.
- To load the third disc, press **DISC CHANGE**.
  → The CD changer carousel will rotate until the empty tray is at the right hand side and is ready for loading.
  → Playback will always start with the disc in the outer right disc tray.

4 Press **OPEN•CLOSE** to close the CD compartment.
  → The total number of tracks and playing time of the last selected disc appear on the display.

3 CD Direct Play

- You can play a CD directly by pressing the corresponding **3 CD DIRECT PLAY (1 - 3)** button. The CD player will stop at the end of playback of the selected disc.
  → When the button is lighted, it indicates that there is a disc loaded in the disc tray.

Playing a CD

1 Press **PLAY** ▶ to start playback.
  → The disc tray, track number and elapsed playing time of the current track appear on the display.
  → The LED on the respective 3 CD Direct Play button will be flashing.
- To interrupt playback, press **PAUSE II** .
  → The playing time flashes.
- To resume playback, press **PLAY** ▶ again.

2 To stop playback, press **STOP ■** .

Note:
– *All the available discs will be played once, then stop. When the CD has stopped playing, the system will switch to the standby mode after 15 minutes if no button is pressed.*

Disc Change

You can change the outer 2 discs while the third inner disc is at the stop or playback mode.

1 Press **DISC CHANGE**.
  → The CD compartment slides out.

2 Replace the discs in the left and right disc trays.
- If you press **DISC CHANGE** again during playback, the CD will stop playing.
  → The CD carousel tray will rotate until the inner tray is at the right hand side and is ready for changing.

3 Press **OPEN•CLOSE** to close the CD compartment.

Selecting a desired track

Selecting a desired track at the stop mode

1 Press **PREV** ⏮ or **NEXT** ⏭ until the desired track appears on the display.

2 Press **PLAY** ▶ to start playback.
  → The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback

1 Press **PREV** ⏮ or **NEXT** ⏭ until the desired track appears on the display.
  → The selected track number and elapsed playing time appear on the display.
- If you press **PREV** ⏮ once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → The volume will be reduced.
- Playback returns to normal when ◀◀ or ▶▶ is released.

Programming Tracks

Programming tracks of a loaded CD is possible in the stop mode. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "PROGRAM FULL".

1 Load the desired discs in the disc trays.

2 Press **PROGRAM** to start programming.
  → The PROGRAM flag starts flashing

3 Press the **CD (CD 1•2•3)** to select the desired disc.

4 Press **PREV** ⏮ or **NEXT** ⏭ to select the desired track.

5 Press **PROGRAM** to store the track.
- Repeat steps ***3*** to ***5*** to store other discs and tracks.

6 Press **STOP ■** once to end programming mode.
  → The total number of tracks programmed and total playing time appear on the display.

Notes:
– *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "--:--" appears in the display instead of the total playing time.*

– *During programming, If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Playing the program

1 Press **PLAY** ▶ to start program playback.
  → "PLAY PROGRAM" will be displayed.
  → The track number and elapsed playing time of the current track will appear on the display.

2 Press **STOP ■** to stop program playback.

Note:
– *If you press any of the 3 CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROGRAM flag will also temporarily disappear from the display and then reappear, when the playback for the selected disc ends.*

Reviewing the program

Reviewing of the program is only possible in the stop mode.
- Press **PREV** ⏮ or **NEXT** ⏭ repeatedly to review the programmed tracks.
- Press **STOP ■** to exit review mode.

Erasing the program *(in the stop mode)*

- Press **CLEAR** on the system.
  → "PROGRAM CLEARED" will be displayed.

Note:
– *The program will be erased when the system is disconnected from the power supply. If the CD carousel is opened, the tracks belonging to the outer two trays will be erased and the display will show "CLEARED".*

Shuffle *(only on remote control)*

It will play all the available discs and their tracks in random order. Shuffle may also be used when tracks are programmed.

To shuffle all the discs and tracks

1 Press **SHUFFLE**.
  → "SHUFFLE" will be displayed.
  → The SHUFFLE flag, the disc and the track selected at random appear on the display.
- The discs and the tracks will now be played in random order until you press **STOP ■** .

2 Press **SHUFFLE** again to resume normal playback.
  → The SHUFFLE flag disappears from the display.

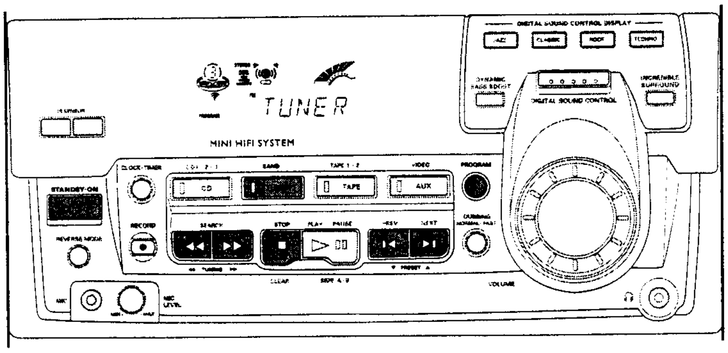
Note:
– *All the available discs will be played once, then stop.*

Repeat *(only on remote control)*

It will play the current track repeatedly.

1 Press **REPEAT** during playback.
  → "REPEAT TRACK" will be displayed.
  → The REPEAT flag and the track selected appear on the display.
- The track will now be played repeatedly until you press **STOP ■** .

2 Press **REPEAT** again to resume normal playback.
  → The REPEAT flag disappears from the display.



Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations in a particular band (FM•MW) automatically.

- Press and hold **STANDBY•ON** *(on the system only)* for 2 seconds.
  → "EASY SET" will be displayed and followed by "TUNER".
  → Easy set will start with the last active band.
  → All available radio stations with sufficient signal strength will be stored until 40 presets are filled.

Notes :
- *When EASY SET is used, all previously stored stations will be erased.*
- *The last preset station will appear on the display when Easy Set is completed.*

Tuning to Radio Stations

1 Press **TUNER** to select TUNER mode.
  → "TUNER" will be displayed.
  → The preset station number, frequency and waveband appear on the display.
2 Press **TUNER (BAND)** again to select the desired waveband : FM or MW.
3 Press **TUNING** ◀◀ or ▶▶ for more than one second, then release.
  → The display will show "SEARCH" until a radio station with sufficient signal strength is found.

- Repeat this procedure until the desired radio station is reached.
- To tune to a weak station, briefly press **TUNING** ◀◀ or ▶▶ until the display shows the desired frequency and/or when the best reception has been obtained.

Storing Preset Radio Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **TUNER**.
2 Press **TUNER (BAND)** again to select the desired waveband : FM or MW.
3 Press **PROGRAM** for more than one second.
  → PROGRAM flag starts flashing and 'AUTO' will be displayed.
  → Every available radio station will be stored automatically. The frequency and preset number will be displayed briefly.
  → The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
  → The system will remain tuned to the last stored preset radio station.

- Repeat the above procedure to store other preset stations for the other waveband. Remember to select the next available preset number before proceeding. If not, some of the preset radio stations may be erased.

Notes:
- *You can cancel the automatic programming by pressing PROGRAM or STOP* ■.
- *If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming: now only the preset numbers 10 to 40 will be programmed.*

Manual programming

1 Press **TUNER**.
2 Press **TUNER (BAND)** to select the desired waveband : FM or MW.
3 Press **PROGRAM** for less than one second.
  → PROGRAM flag, the frequency and preset station number start flashing.
  → The next available preset number will be displayed for selection.
4 Press **TUNING** ◀◀ or ▶▶ to tune to the desired frequency.

- When all 40 presets are stored, no preset number is shown.
  → The message "PROGRAM FULL" will be displayed.
- If you wish to store the radio station to another preset number, press **PRESET** ▼ or ▲ to select the desired preset number.

5 Press **PROGRAM** again.
  → PROGRAM flag will stop flashing, and the radio station will be stored.

- Repeat the above procedure to store other preset radio stations.

Notes:
- *You can cancel the manual programming by pressing STOP* ■.
- *During programming, If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

- Press **PRESET** ▼ or ▲ to select the desired preset number.
  → The preset number, frequency and waveband appear on the display.

Changing the MW tuning grid

(not available for version /30)

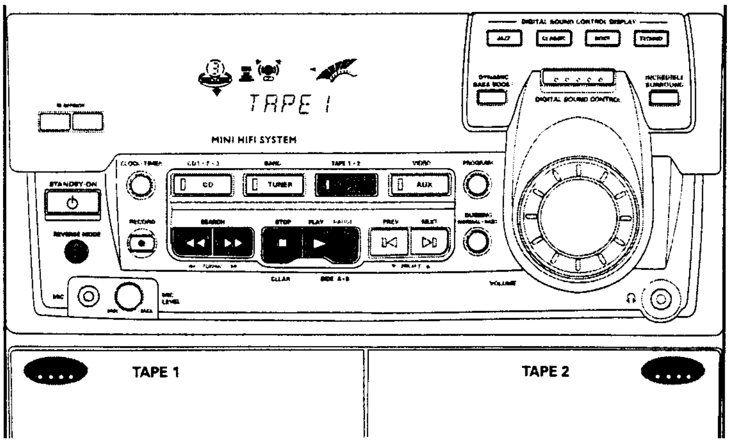
The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz. In other parts of the world, it is 9 kHz. The frequency step presetted in the factory is 9 kHz.

For MW band
To change from 9 kHz to 10 kHz or vice versa

Changing of tuning grid will erase all previously stored preset stations.

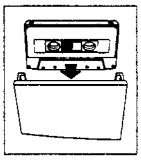
1 Disconnect the system from the AC power supply *(pull out the AC power cord).*
2 Press **TUNER** and **TUNING** ▶▶ depressed while reconnecting the system to the AC power supply.
  → Display will show "TUNER" and follow by "GRID 9" or "GRID 10".

Notes:
- *GRID 9 indicates that the tuning grid is in step of 9 kHz in MW band. GRID 10 indicates that the tuning grid is in step of 10 kHz in MW band.*
- *FM tuning grid will also be changed from 50 kHz to 100 kHz or vice versa. All preset radio stations will also be erased.*



Loading a tape

- Press **OPEN**.
- The tape deck door opens.
- Load the tape with the open side downward and the full spool to the left.
- Close the tape deck door.



Tape Playback

1 Press **TAPE** to select TAPE mode.
 → "TAPE 1" or "TAPE 2" will be displayed.
- Press **TAPE** again to select either tape deck 1 or tape deck 2.

2 Load the tape into the desired tape deck.
3 Press **PLAY** ▶ to start playback.
3a *(For Tape Deck 2 only)*
Press **SIDE A•B** to switch playback between sides A and B.
 → The ◀ or ▶ (back or front) flag appears on the display, depending on the side selected.
3b *(For Tape Deck 2 only)*
Press **REVERSE MODE** to select the different type of playback mode *(see auto reverse playback)*.
4 Press **STOP** ■ to end playback.

Notes:
- *To change side before playback begins, use the SIDE button on the remote control.*
- *When the tape has stopped playing, the system will switch to the standby mode automatically after 15 minutes if no button is pressed.*

Auto Reverse Playback *(only on tape deck 2)*

- Press **REVERSE MODE** to select the different playback modes.

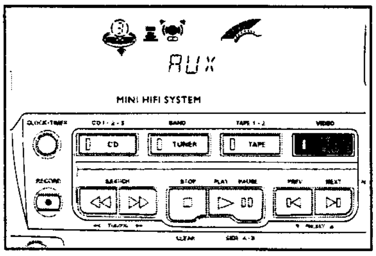
⊐ .... recording or playback on one side of the tape. The tape stops at the end of one side.
⊃ .... recording or playback on both sides of the tape. The tape then stops.
⊂⊃ .... continuous playback on both sides of the tape up to a maximum of 20 times per side unless you press **STOP** ■ .

Rewind/Fast Forward *(only on tape deck 2)*

At the stop mode
1 You can rewind or fast forward the tape by pressing ◀◀ or ▶▶ respectively.
 → "«« or »»" will be displayed depending on which button is pressed.
 → The tape will stop automatically at the end of the rewinding or fast forwarding.
2 Press **STOP** ■ to stop rewind or fast forward.

During playback
- Press and hold ◀◀ or ▶▶ respectively until the desired passage is located.
 → During searching, the sound is reduced to a low volume.
 → When you release ◀◀ or ▶▶, the tape continues playing.

Notes:
- *During rewinding or fast forwarding of a tape, it is possible to select another source (e.g. CD, TUNER or AUX).*
- *Check and tighten slack tape with a pencil before use. Slack tape may get jammed or may burst in the mechanism.*
- *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.*
- *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or loudspeaker boxes).*

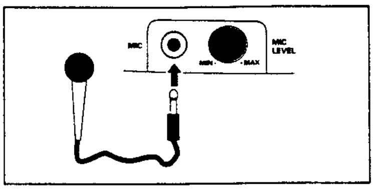


Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals, you can hear the sound from the system.

- Press **AUX** to select the external mode.
 → "AUX" will be displayed.

Note:
- *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*

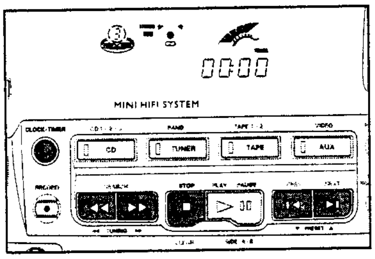


Karaoke *(not available for version /30)*

Microphone mixing
1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
2 Connect a microphone to the **MIC** socket.
3 Press **CD**, **TUNER**, **TAPE** or **AUX**.
4 Play the selected source.
5 Adjust the volume level with **VOLUME** control.
6 Adjust the **MIC LEVEL** control to the mixing level that you want.
7 Start singing or talking through the microphone.

Note:
- *It is advisable to switch off Incredible Surround during karaoke.*

CLOCK TIMER



View Clock

You can view the clock (if it is set) at standby or any source mode. It will be displayed for about 7 seconds.

- Press **CLOCK•TIMER** briefly.
  → " 10:25 " (the current time) will be displayed.
  → " - - : - - " will be displayed if the clock is not set.

Clock setting

The clock is set in 24-hour mode, e.g. 00:00 or 23:59. Before setting the clock, you must be at the View Clock mode.

1. Press **CLOCK•TIMER** to select clock mode.
   → "00:00" or the current time starts flashing.
   → "◀◀ , ▶▶ , ⏮ , ⏭ " light up.
2. Set the hour with ◀◀ or ▶▶.
3. Set the minute with ⏮ or ⏭.
4. Press **CLOCK•TIMER** again to store the setting.
   → The clock starts running.

- To exit without storing the setting, press **STOP ■**.

Notes:
- *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
- *When power interruption occurs, the clock setting is erased.*

Timer Setting

- The system can switch on to CD, TUNER or TAPE 1 mode automatically at a preset time. It can serve as an alarm to wake you up. After half an hour from the preset time, the system will return to the standby mode if no button is pressed.
- Before setting the timer, make sure the clock is set correctly.
- The timer has to be reset or start again for each subsequent preset time.
- **The volume of the timer will be at the last setting before the system is switched to standby mode.**

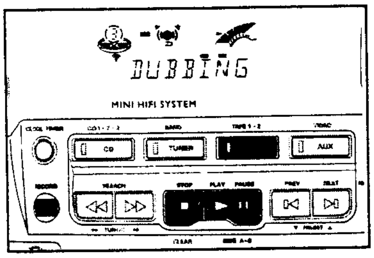
1. Press and hold **CLOCK•TIMER** for more than 2 seconds to select timer mode.
   → "ON 00:00" or the last set timer starts flashing. The TIMER flag will be displayed.
   → The last selected source is lighted while other available sources are flashing.
   → "◀◀ , ▶▶ , ⏮ , ⏭ " light up.
2. Press **CD**, **TUNER** or **TAPE** to select the desired source.
3. Press ◀◀ or ▶▶ to set the hour for the timer to start.
4. Press ⏮ or ⏭ to set the minute for the timer to start.
5. Press **CLOCK•TIMER** again to store the start time and the selected source.
   → The TIMER is now set.
   → The TIMER flag remains on the display.

- At the preset time, the TIMER will be activated.
  → The selected source will be played.
  → The TIMER flag disappears from the display.

Notes:
- *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
- *If the source selected is TUNER, the last tuned frequency will be switched on.*
- *If the source selected is CD, playback will begin with the first track of the last selected disc. If the CD trays are empty, the TUNER will be selected instead.*
- *If the source selected is TAPE 1, and if the preset time is reached during high speed dubbing, the TUNER will be selected instead.*

To start the TIMER again *(for the same time)*
1. Press **CLOCK•TIMER** for more than 2 seconds.
2. Press **CLOCK•TIMER** again to store the start time and the selected source.

RECORDING



Notes:
- *If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording sources.*
- *For recording, use only tape of IEC type 1 (normal tape) or IEC type II (Chrome).*
- *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for six to seven seconds.*
- *The recording level is set automatically, regardless of the position of VOLUME, DBB or Incredible Surround.*
- *To prevent accidental recording, break out the tab on the left shoulder of the tape side that you want to protect.*
- *If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO_2 tape detection hole when covering the tab opening.*

Recording from other sources *(only on tape deck 2)*

1. Press **TAPE** to select tape deck 2 .
2. Load a blank tape into tape deck 2 with the open side downward.
3. Press **SIDE** on remote control to select the recording side.
   → The ◀ or ▶ (back or front) flag will be displayed, depending on the side selected.
4. Press **REVERSE MODE** to select the playback mode (⊐ or ⊃).
5. Press **CD**, **TUNER** or **AUX**.

- Start playback of the selected source.

6. Press **RECORD** to start recording.
   → The REC flag starts flashing.
7. Press **STOP ■** to stop recording.

Notes:
- *Only ⊐ or ⊃ mode is available during recording.*
- *During recording, it is not possible to listen to another source.*

Dubbing tapes *(from tape deck 1 to tape deck 2)*

1. Press **TAPE** to select tape deck 2 .
2. Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2.
   → Make sure that the tape in tape deck 1 has its full spool to the left.
3. Press **SIDE** on remote control to select the recording side.
4. Press **DUBBING** ***once*** for normal speed dubbing or ***twice*** *(within 2 seconds)* for high speed dubbing.
   → "NORMAL" (normal speed) or "FAST" (high speed) will be displayed and then followed by "DUBBING".
   → The HSD flag appears on the display for high speed dubbing.

- Dubbing will start immediately.
  → The REC flag starts flashing.

5. Press **STOP ■** to stop dubbing.

Notes:
- *At the end of side A, flip the tapes to side B and repeat the procedure.*
- *Dubbing of tapes is only possible from tape deck 1 to tape deck 2.*
- *To ensure good dubbing, use tapes of the same length.*
- *During high speed dubbing in Tape mode, the sound is reduced to a low volume.*
- *You can switch to other source while dubbing.*

RECORDING

CD Synchro Start Recording

1 Load a blank tape into tape deck 2 and a disc into the disc tray.
2 Press **CD** to select CD mode.
→ You can program the tracks in the order you want them to be recorded (see Programming Tracks). If not, the tracks are recorded according to the selected disc.
3 Press **RECORD** to start recording.
→ The REC flag starts flashing.
- CD will start playback automatically.

4 Press **STOP ■** to stop recording.

Recording the mixed sound/One Touch Recording

- During microphone mixing, you can record the mixed sound on a tape in tape deck 2 except dubbing mode *(not available for version /30).*
- For One Touch Recording, as soon as you press RECORD, the current source will be recorded on tape deck 2.

1 Load a blank tape in tape deck 2.
2 Press **RECORD** to start recording.
→ The REC flag starts flashing.
3 Press **STOP ■** to stop recording.

Note:
– When you press RECORD at TAPE mode, "SELECT OTHER SOURCE" will be displayed. One Touch Recording is not possible at TAPE mode.

MAINTENANCE

Maintenance

Cleaning the Cabinet
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens
- After prolonged usage, dirt or dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available. Follow the instructions supplied with the Lens Cleaner.

Cleaning the Tape Heads and the Tape Paths
- To ensure good recording and playback quality, clean the heads, capstan(s) and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape through once.

Demagnetizing the heads
- Use a demagnetizing tape available at your dealer.

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TROUBLESHOOTING

Warning! Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.
- The disc is inserted upside down.

→ *Place CD with printed side up.*
- Moisture condensation at the lens.

→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.

→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.

→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.

→ *See section under Maintenance.*

Radio Reception

Poor radio reception
- The signal strength is too weak.

→ *Adjust the antenna.*
- The TV or VCR is too close to the stereo system.

→ *Separate the stereo system from the TV or VCR.*
→ *Connect an external antenna for better reception.*

Cannot tune to station.
- Wrong tuning grid.

→ *Switch to the correct tuning grid.*

Tape Deck Operation

"RECORDING ACTIVE" is displayed.
- A recording is in progress.

→ *Stop the recording or wait until it is finished.*

"TAPE DUBBING ONLY" is displayed.
- Tape dubbing is only possible in tape mode.

→ *Switch source to tape mode.*

Recording or playback cannot be made or there is a decrease in audio level.
- Dirty tape heads, capstans or pressure rollers.

→ *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.

→ *Use demagnetizing tape.*

General

System does not react when any button is pressed.
- Electrostatic discharge.

→ *Press STANDBY•ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect and switch on the system again.*

No or poor sound.
- Volume is not turned up.

→ *Adjust VOLUME.*
- The headphones are connected.

→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.

→ *Check that the speakers are connected correctly.*
→ *Make sure that the stripped speaker wire is clamped.*

Reversed left and right sound.
- Speakers are incorrectly connected.

→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.
- Speakers are incorrectly connected.

– *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.
- Wrong source is selected.

→ *Select the source (CD, TUNER, etc.) before pressing the function button (PLAY, PREV/NEXT, etc.).*
- The distance to the system is too large.

→ *Reduce the distance.*
- Batteries are inserted incorrectly.

→ *Insert the batteries with their polarities (+/- signs) as indicated.*
- Batteries are exhausted.

→ *Replace the batteries.*

Timer not working.
- Timer is not switched on.

→ *Press CLOCK•TIMER on the system to switch on the timer.*
- Dubbing/recording is in progress.

→ *Stop dubbing/recording.*

System display features automatically and buttons flashing continuously.
- Demonstration mode is switched on.

→ *Press and hold STOP ■ for 3 seconds to switch off the demonstration mode.*

ADDITIONAL FEATURES - OTHER VERSION

Receiving RDS radio station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

- **STATION NAME:** The station name is displayed.
- **FREQUENCY:** The frequency of the station is displayed.
- **PROGRAM TYPE:** The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
- **RADIO TEXT (RT):** text messages appear in the display.

When you have tuned to a RDS station, the RDS logo and the station name will appear on the display:

- The display normally shows the radio station name if available.
  By repeatedly pressing **RDS** button you can change the type of display information:
  → The display shows in turn:
  STATION NAME → FREQUENCY →
  PROGRAM TYPE → RADIO TEXT →
  STATION NAME ...

Note:
- *When you press the RDS button and the display shows "NO RDS", it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.*

RDS Time

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock

1 Press **CLOCK•TIMER**.
  → "- - : - -" or current time appears on the display.
2 Press **CLOCK•TIMER** once more to enter clock setting mode.
  → "00:00" or current time starts flashing.
3 Press **RDS**.
  → The message "SEARCH RDS TIME" will be displayed.
  → If the station does not transmit RDS clock, "NO RDS TIME" will be displayed.
  → When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.

News *(only available in Radio Station with RDS)*

You can activate NEWS function in Standby or any source mode except Tuner mode. Once the News PTY (program type) is detected in a RDS station, it will switch to TUNER mode automatically.

To start NEWS function

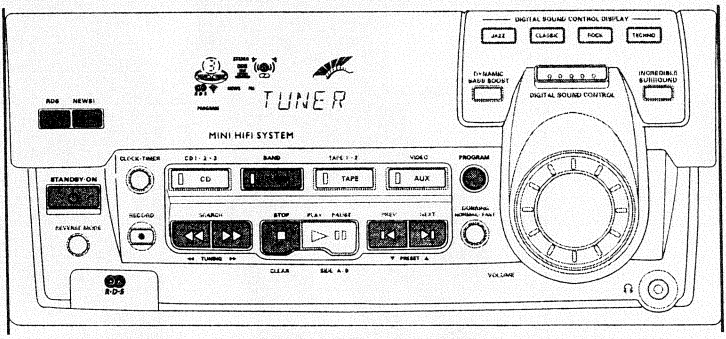
1 Press **NEWS**.
- The NEWS flag and "NEWS ON" will be displayed.
- It will search for the first available RDS station in the presets and wait for the News PTY (program type) to be available. During News PTY search :
  → If **NEWS** activate from Standby or Demo mode, the display will show "WAITING FOR NEWS".
  → If **NEWS** is activated from CD, Tape or Aux mode, the current source activity will be remain uninterrupted.
  → If no RDS station is found after the search, the News function will be switched off. The display will show "NO RDS NEWS" and NEWS flag will disappear from the display.
- When News transmission is detected, the system will switch to Tuner mode.
  → The NEWS flag starts flashing.
- After News has ended, the last selected source mode will be resumed.
  → The NEWS flag will disappear from the display.

To cancel NEWS function

- Press **NEWS** again.
  → The NEWS flag disappears and "NEWS OFF" will be displayed.
  → The last selected source mode will be resumed.

Notes:
- *During NEWS bulletin, you can press any available source button to cancel NEWS function and execute the relevant source mode.*
- *The NEWS works only once for each activation.*
- *If NEWS is activated from Standby or Demostration mode, it switches to Tuner mode and the sound will be muted until News is available.*

ADDITIONAL FEATURES - OTHER VERSION



Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations and RDS stations in a particular band (FM•MW•LW) automatically.

1 Press and hold **STANDBY•ON** *(on the system only)* for 2 seconds.
  → "EASY SET" will be displayed and followed by "TUNER".
  → Easy set will start with the last active band.
  → All available radio stations with sufficient signal strength will be stored or until 40 presets are filled.
2 The system will search once again for the first available RDS station and to set the RDS time automatically.

- When searching RDS station;
  → "SEARCH RDS STATION" will be displayed. If no RDS station is available, the program will exit automatically.
  → After a station is found, "EASY SET" will be displayed and followed by "TIME".
- When searching RDS time;
  → "SEARCH RDS TIME" will be displayed.
  → When RDS time is read, "RDS TIME" will be displayed. The current time is displayed for 2 seconds and will be stored automatically.

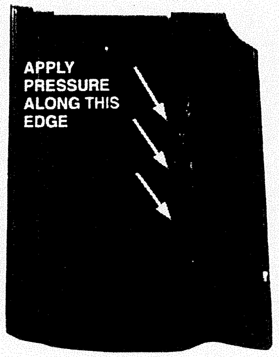
Notes :
- *When EASY SET is used, all previously stored stations will be erased.*
- *The last preset station or the first available RDS will appear on the display when Easy Set is completed.*
- *If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show "NO RDS TIME".*

Tuning to Radio Stations

1 Press **TUNER** to select TUNER mode.
  → "TUNER" will be displayed.
  → The preset station number, frequency and waveband appear on the display.
2 Press **TUNER (BAND)** again to select the desired waveband : FM, MW or LW.
3 Press **TUNING** ◀◀ or ▶▶ for more than one second, then release.
  → The display will show "SEARCH" until a radio station with sufficient signal strength is found.
- Repeat this procedure until the desired radio station is reached.
- To tune to a weak station, briefly press **TUNING** ◀◀ or ▶▶ until the display shows the desired frequency and/or when the best reception has been obtained.

DISMANTLING INSTRUCTIONS

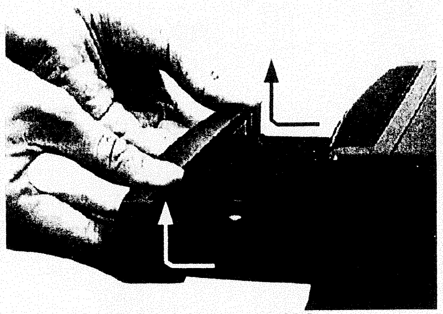
Dismantling of the Cassette Cover



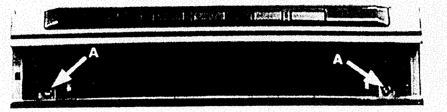
Cassette door

Dismantling of the CDC Module and Front Panel

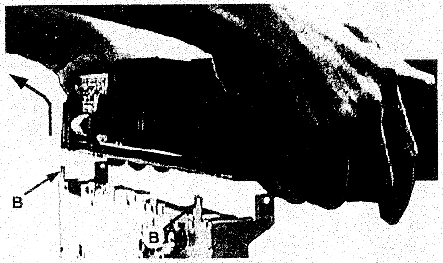
1) Loosen the 17 screws to remove the Cabinet Rear (pos 289).
   - 5 screws each on the left & right side of the Cabinet
   - 7 screws at the rear of the Cabinet
2) Slide out the tray and remove the Cover Tray CDC (pos 205) as indicated.
3) Loosen the 2 screws A and 2 screws B to remove the CDC Module (pos 1104) as indicated.
4) Remove 1 screw at the bottom of the Bottom Plate to separate the Front Panel Assembly from the Bottom Plate (pos 286).



Remove Cover Tray CDC



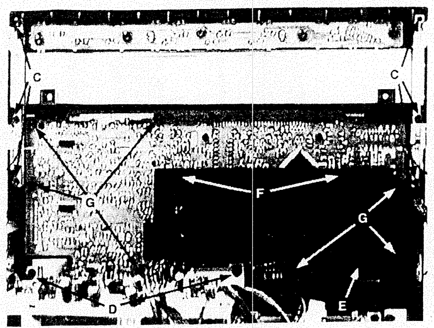
Front CDC



Remove CDC Module

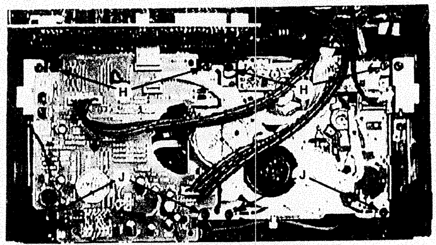
Dismantling of the Front Board

1) Remove 6 screws C as indicated to take out the CDC Left Bracket (pos 267) and CDC Right Bracket (pos 268).
2) Remove 2 screws D as indicated to loosen the AF Board (pos 1101).
3) Remove 1 screw E as indicated to loosen the Karaoke Board (only for set with Karaoke board).
4) Remove 2 screws F as indicated to lossen the Plate Front (pos 266) from the Front Board.
5) Remove 7 screws G as indicated to loosen the Front Board (pos 1102).



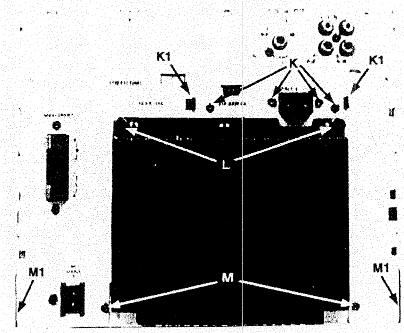
Dismantling of the ETF Module

1) Remove 8 screws (4 x screws H and 4 x screws J) as indicated to loosen the ETF Module (pos 1105).



Dismantling of Rear Portion

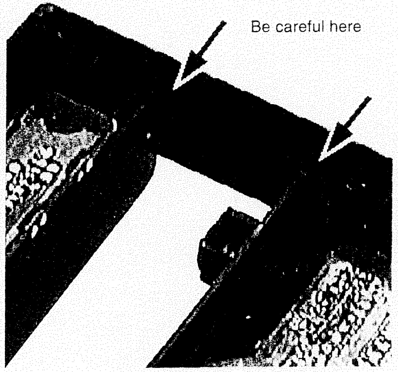
1) Remove 4 screws K and uncatch K1 to loosen the Tuner Board (pos 1100).
2) Remove 2 screws L to free the Rucksack (pos 309).
3) Remove 2 screws M and uncatch M1 to take out the Rear Plate (pos 284).



Repair Hints

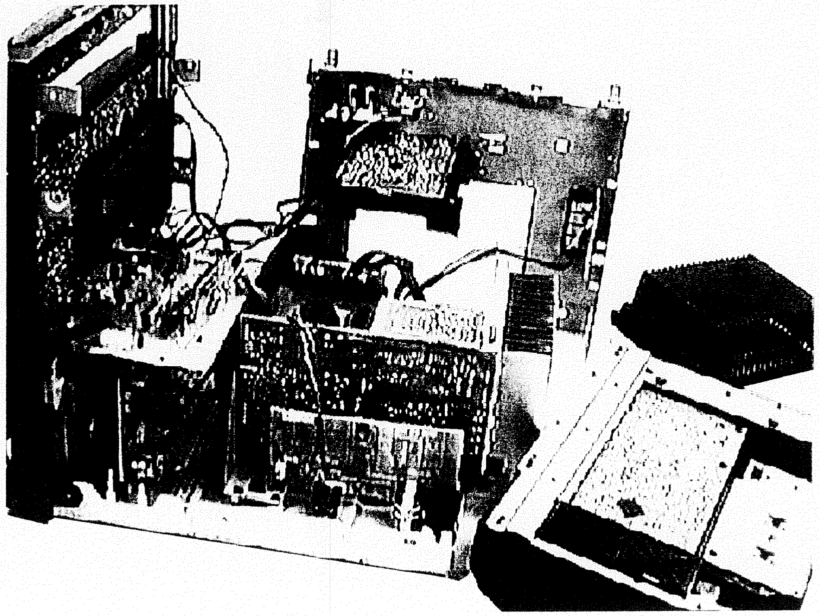
1) During re-assembly Front board, care should be taken to dress the thin bunch of wires (between Front board & CDC Key board) properly in the slots provided so that it will not be damaged by the CDC bracket (pos 267). See picture 1.

2) During repair it is possible to disconnect the Tuner board and CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

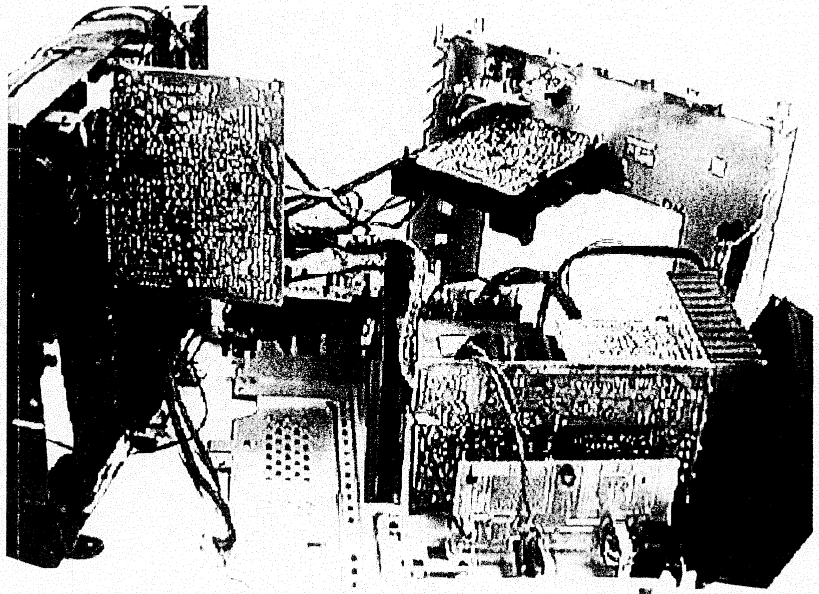


Picture 1

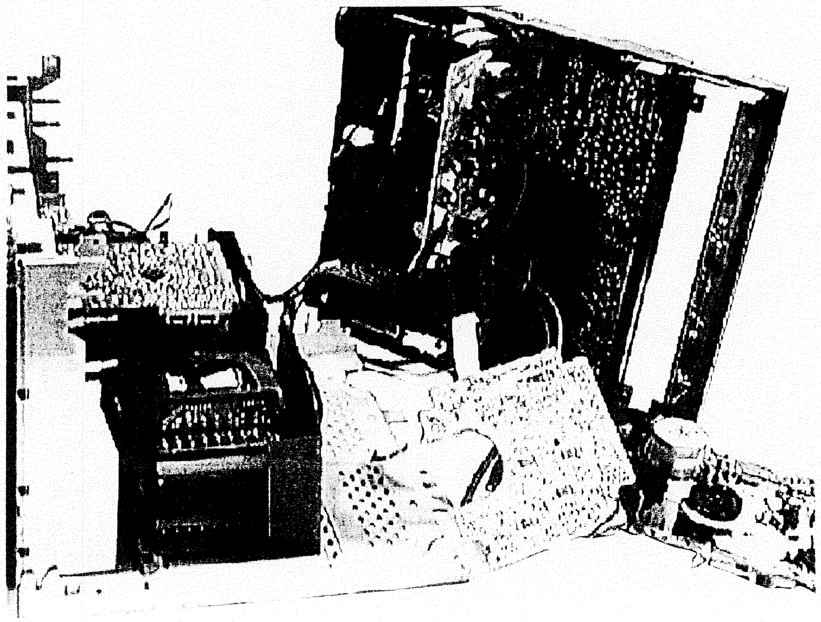
Service pos A



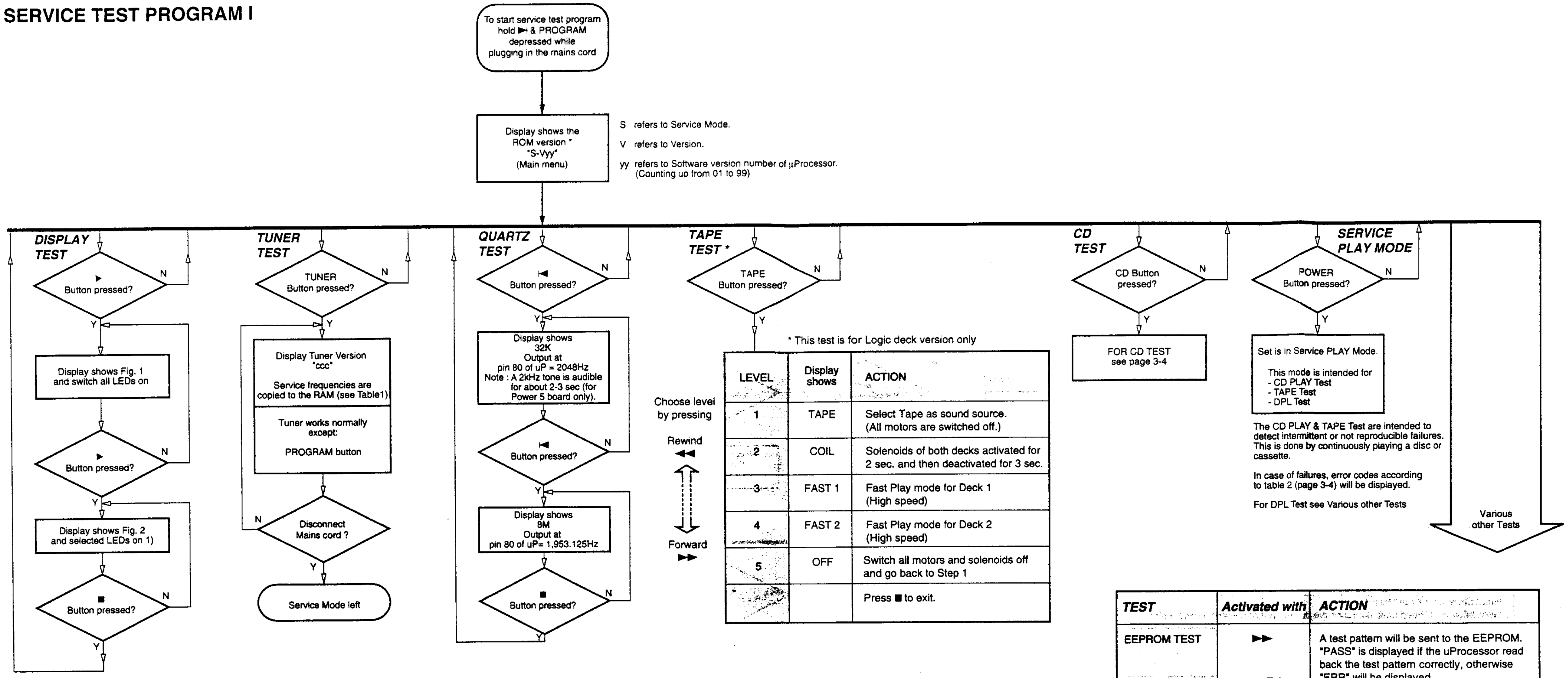
Service pos B



Service pos C



SERVICE TEST PROGRAM I


To start service test program hold ►I & PROGRAM depressed while plugging in the mains cord
Display shows the ROM version * "S-Vyy" (Main menu)
DISPLAY TEST
► Button pressed?
N
Y
Display shows Fig. 1 and switch all LEDs on
► Button pressed?
Display shows Fig. 2 and selected LEDs on 1)
■ Button pressed?
TUNER TEST
TUNER Button pressed?
Display Tuner Version "ccc"
Service frequencies are copied to the RAM (see Table1)
Tuner works normally except:
PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
I◄ Button pressed?
Display shows 32K Output at pin 80 of uP = 2048Hz Note : A 2kHz tone is audible for about 2-3 sec (for Power 5 board only).
I◄ Button pressed?
Display shows 8M Output at pin 80 of uP= 1,953.125Hz
■ Button pressed?
TAPE TEST *
TAPE Button pressed?
Choose level by pressing
Rewind ◄◄
Forward ►►
CD TEST
CD Button pressed?
FOR CD TEST see page 3-4
SERVICE PLAY MODE
POWER Button pressed?
Set is in Service PLAY Mode.
This mode is intended for
- CD PLAY Test
- TAPE Test
- DPL Test
Various other Tests

S refers to Service Mode.

V refers to Version.

yy refers to Software version number of µProcessor.
(Counting up from 01 to 99)

* This test is for Logic deck version only

LEVEL	Display shows	ACTION
1	TAPE	Select Tape as sound source. (All motors are switched off.)
2	COIL	Solenoids of both decks activated for 2 sec. and then deactivated for 3 sec.
3	FAST 1	Fast Play mode for Deck 1 (High speed)
4	FAST 2	Fast Play mode for Deck 2 (High speed)
5	OFF	Switch all motors and solenoids off and go back to Step 1
		Press ■ to exit.

The CD PLAY & TAPE Test are intended to detect intermittent or not reproducible failures. This is done by continuously playing a disc or cassette.

In case of failures, error codes according to table 2 (page 3-4) will be displayed.

For DPL Test see Various other Tests

PRESET	Europe "EUR"	East Eur. 3-band "EAS"	East Eur. 2-band "EAS"	USA "USA"	Oversea "OSE"	Korea "KOR"	Japan "JAP"
1	87.5MHz	65.81MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz	76MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz	108MHz	CH3 107.75MHz
3	531kHz	74MHz	74MHz	530kHz	531/530kHz	531kHz	90MHz
4	1602kHz	87.5MHz	87.5MHz	1700kHz	1602/1700kHz	1602kHz	CH1 95.75MHz
5	558kHz	531kHz	531kHz	560kHz	558/560kHz	558kHz	CH2 101.75MHz
6	1494kHz	1602kHz	1602kHz	1500kHz	1494/1500kHz	1494kHz	531kHz
7	153kHz	558kHz	558kHz	98MHz	87.5MHz	87.5MHz	1602kHz
8	279kHz	1494kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz	558kHz
9	198kHz	153kHz	98MHz	87.5MHz	87.5MHz	87.5MHz	1494kHz
10	98MHz	279kHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz	80MHz
11	87.5MHz	198kHz	65.81MHz	87.5MHz	98MHz	98MHz	76MHz

Table 1

East Europe TUNER IF offset correction

1) Input a reference frequency 87.5MHz from the generator.

2) Proceed to the Tuner Test Mode

3) Hold TUNER button down for > 3 seconds

4) The set will self-calibrate automatically and display "OFS-xx" when calibration is successful, otherwise it will display "00E".

xx : offset value between -3 to +3

Note: This has to be done whenever the Eeprom, Microprocessor or the components in the oscillator circuitry are replaced.

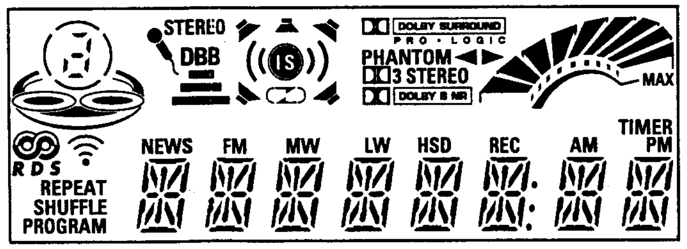
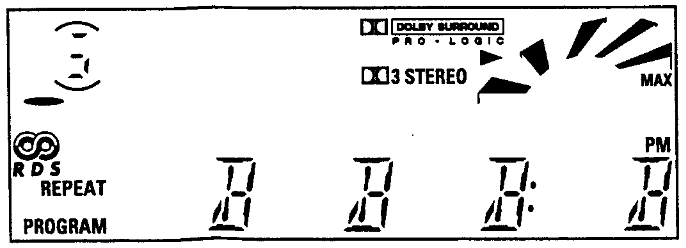

STEREO
DBB
IS
DOLBY SURROUND
PRO · LOGIC
PHANTOM
3 STEREO
MAX
TIMER
PM
NEWS
FM
MW
LW
HSD
REC
AM
RDS
REPEAT
SHUFFLE
PROGRAM

Figure 1


DOLBY SURROUND
PRO · LOGIC
3 STEREO
MAX
PM
RDS
REPEAT
PROGRAM

1) CDC1, CDC3, Tuner, Aux, Incredible Surround, Jazz, Rock, Center Phantom, ◄◄, ►, I◄.

Figure 2

TEST	*Activated with*	*ACTION*
EEPROM TEST	►► ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERR" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	►I ■ to Exit	Key numbers according table 3 are shown on the display. (see Chapter 3-4)
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
VOLUME TEST	Volume Knob	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
DPL TEST (only possible in Service Play mode)	DPL	The set enters into Pro-logic install mode. The noise-source switches between Left, Center, Right and Rear speakers. Pro-logic settings cannot be install in this test.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

Error code	Type	Error Description
E1000	W	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	W	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	W	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed. Inner-switch or sledge motor problem.
E1003	W	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	W	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	W	Subcode Error (no subcode within time) Triggered when a new subcode was missing for a certain time during play.
E1007	W	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	W	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	F	Focus Search Error The focus point has not been found within a certain time.
E1070	W	The carousel switch is not open within time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	W	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	W	The drawer could not enter the inside position is opening again. This can be caused because the drawer is blocked by something and cannot go fully inside, or the drawer switch is defective and does not close.
E2020	F	Head Movement Error Deck 1 Generated if the head does not reach the desired position within a certain time.
E2021	F	Head Movement Error Deck 2 Generated if the head does not reach the desired position within a certain time.

F = Fatal error & the set stop play function W = Warning

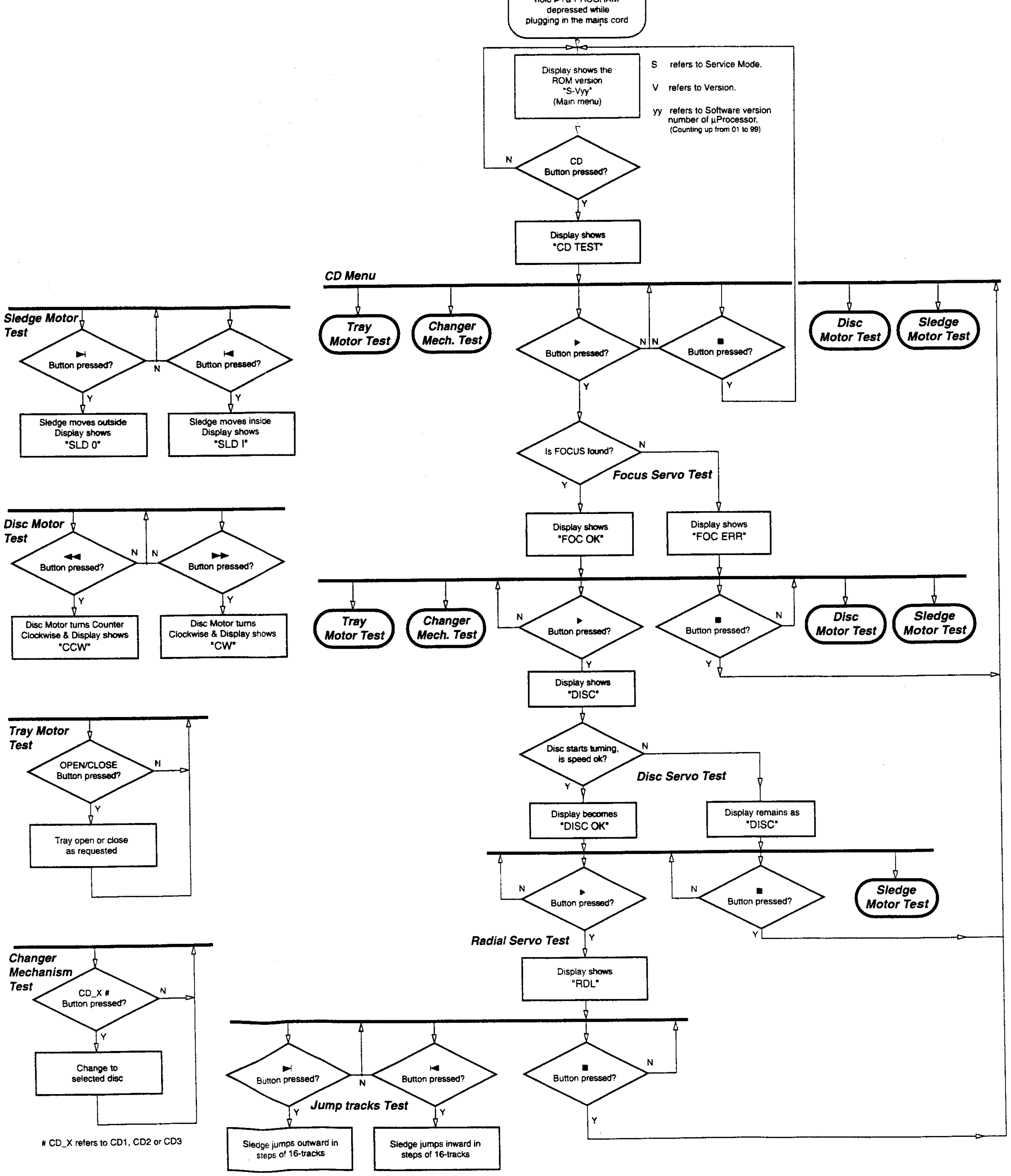
Table 2

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	PROLOGIC*	10	MODE*	21
Any Remote control key	RC	PHANTOM*	11	RECORD*	22
CD1*	1	3 STEREO*	12	◄◄	23
CD2*	2	INCREDIBLE SURROUND*	13	►►	24
CD3*	3	STANDBY-ON	14	■	Exit
DISC CHANGE	4	CLOCK / TIMER	15	►II	26
OPEN / CLOSE	5	CD	16	I◄	27
RDS*	6	TUNER	17	►I	28
NEWS*	7	TAPE	18	HSD	29
DSC	8	AUX	19		
DBB	9	PROGRAM	20		

* Not for all type/version

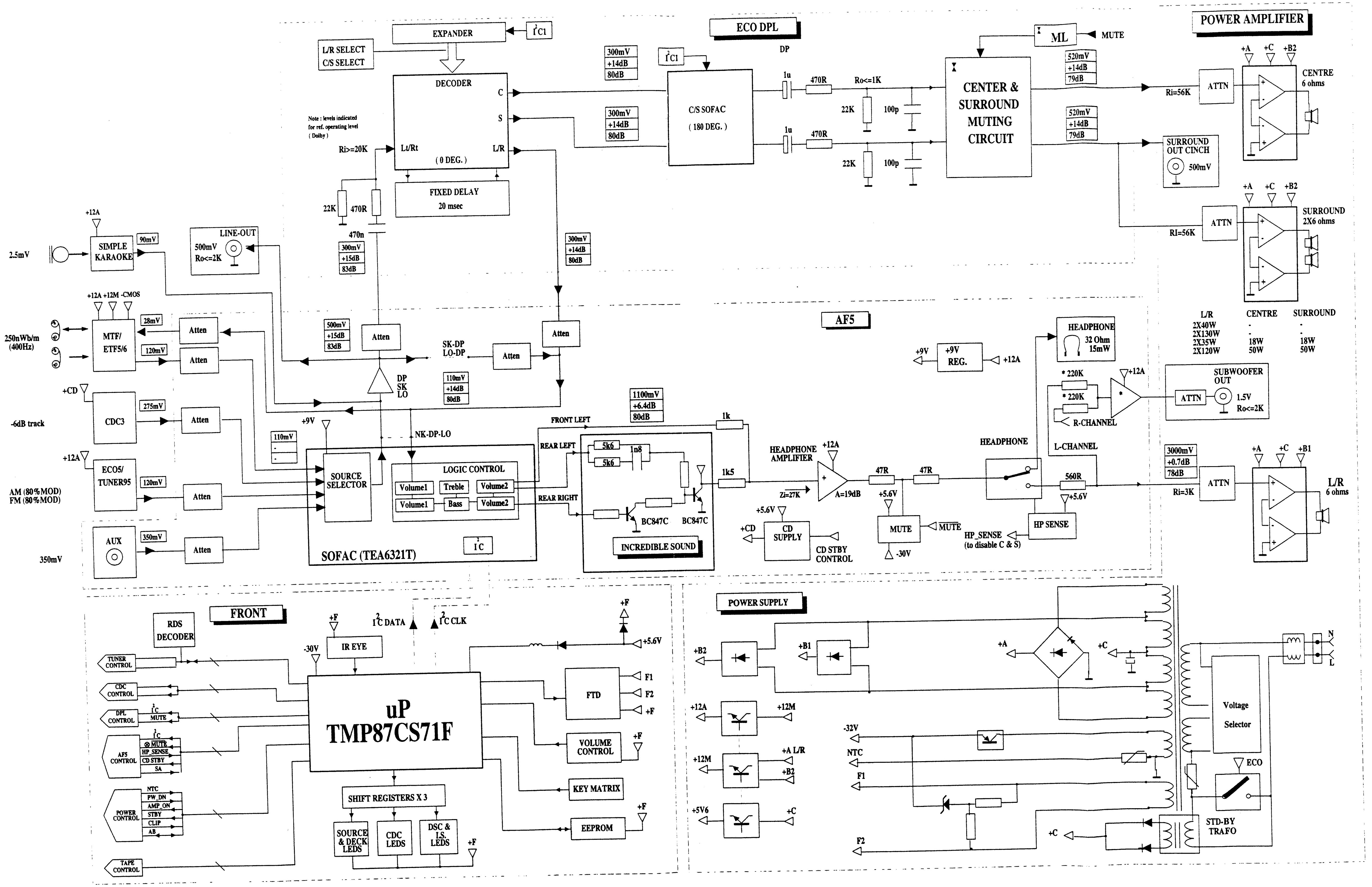
Table 3

SERVICE TEST PROGRAM II


To start service test program hold ►I & PROGRAM depressed while plugging in the mains cord
Display shows the ROM version "S-Vyy" (Main menu)
S refers to Service Mode.
V refers to Version.
yy refers to Software version number of µProcessor. (Counting up from 01 to 99)
CD Button pressed?
N
Y
Display shows "CD TEST"
CD Menu
Tray Motor Test
Changer Mech. Test
► Button pressed?
■ Button pressed?
Disc Motor Test
Sledge Motor Test
Is FOCUS found?
Focus Servo Test
Display shows "FOC OK"
Display shows "FOC ERR"
Display shows "DISC"
Disc starts turning, is speed ok?
Disc Servo Test
Display becomes "DISC OK"
Display remains as "DISC"
Radial Servo Test
Display shows "RDL"
►I Button pressed?
I◄ Button pressed?
Jump tracks Test
Sledge jumps outward in steps of 16-tracks
Sledge jumps inward in steps of 16-tracks
Sledge Motor Test
Sledge moves outside Display shows "SLD 0"
Sledge moves inside Display shows "SLD I"
Disc Motor Test
◄◄ Button pressed?
►► Button pressed?
Disc Motor turns Counter Clockwise & Display shows "CCW"
Disc Motor turns Clockwise & Display shows "CW"
Tray Motor Test
OPEN/CLOSE Button pressed?
Tray open or close as requested
Changer Mechanism Test
CD_X # Button pressed?
Change to selected disc

CD_X refers to CD1, CD2 or CD3

SET BLOCK DIAGRAM

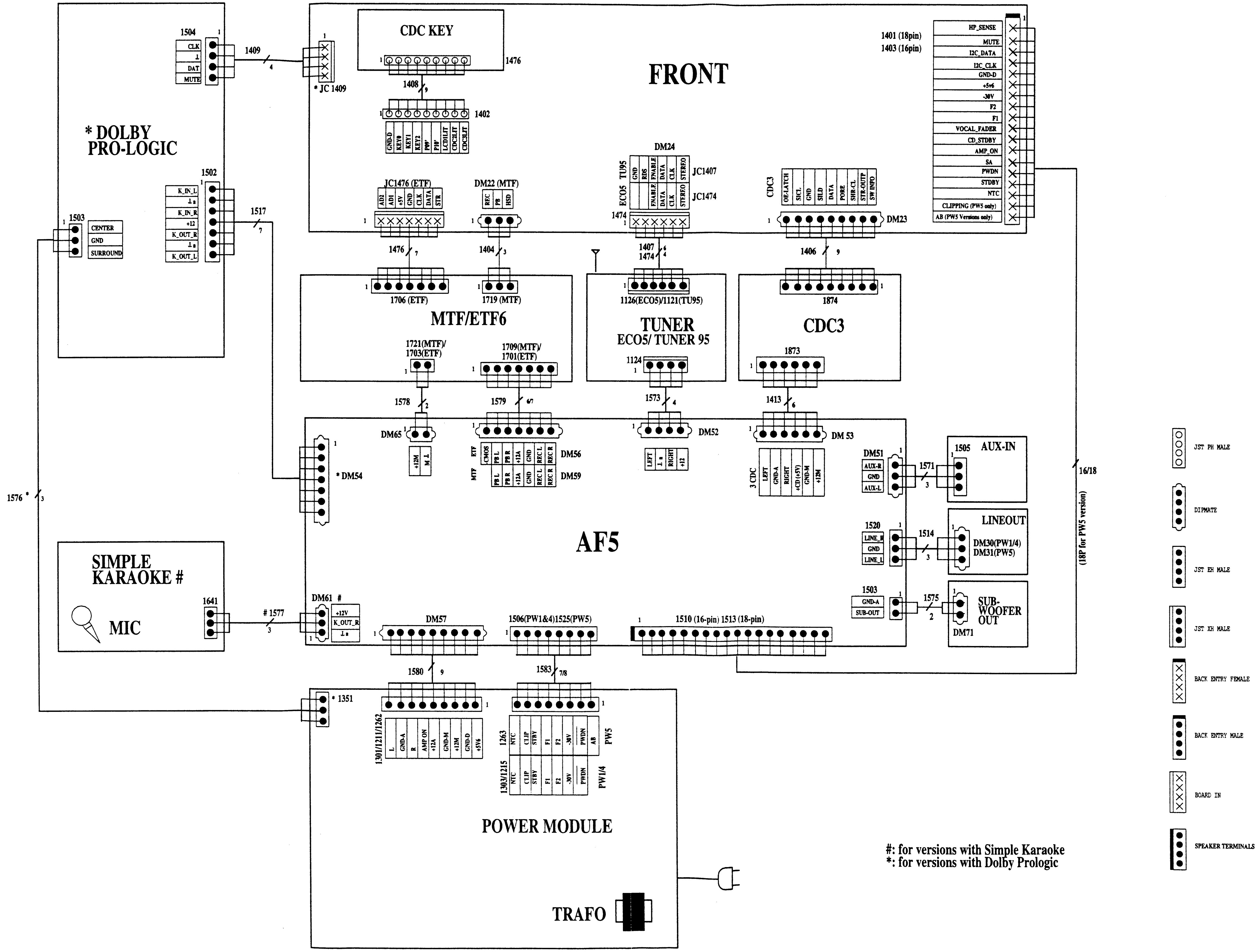

EXPANDER
I²C1
L/R SELECT
C/S SELECT
DECODER
C
S
L/R
Lt/Rt
(0 DEG.)
Ri>=20K
Note : levels indicated for ref. operating level (Dolby)
FIXED DELAY 20 msec
22K
470R
470n
300mV +15dB 83dB
ECO DPL
DP
I²C1
300mV +14dB 80dB
300mV +14dB 80dB
C/S SOFAC (180 DEG.)
1u
470R
Ro<=1K
22K
100p
CENTER & SURROUND MUTING CIRCUIT
ML
MUTE
520mV +14dB 79dB
520mV +14dB 79dB
POWER AMPLIFIER
+A +C +B2
ATTN
Ri=56K
CENTRE 6 ohms
SURROUND OUT CINCH 500mV
RI=56K
SURROUND 2X6 ohms
L/R CENTRE SURROUND
2X40W - -
2X130W - -
2X35W 18W 18W
2X120W 50W 50W
300mV +14dB 80dB
2.5mV
+12A
SIMPLE KARAOKE
90mV
LINE-OUT
500mV Ro<=2K
+12A +12M -CMOS
250nWb/m (400Hz)
MTF/ ETF5/6
28mV
120mV
Atten
Atten
500mV +15dB 83dB
Atten
SK-DP LO-DP
Atten
Atten
DP SK LO
110mV +14dB 80dB
AF5
+CD
CDC3
275mV
-6dB track
Atten
+9V
NK-DP-LO
110mV
+12A
ECO5/ TUNER95
120mV
AM (80%MOD) FM (80%MOD)
Atten
SOURCE SELECTOR
LOGIC CONTROL
Volume1 Treble Volume2
Volume1 Bass Volume2
SOFAC (TEA6321T)
I²C
AUX
350mV
350mV
Atten
FRONT LEFT
REAR LEFT
REAR RIGHT
1100mV +6.4dB 80dB
5k6
5k6
1n8
BC847C
BC847C
INCREDIBLE SOUND
1k
1k5
HEADPHONE AMPLIFIER
+12A
Zi=27K
A=19dB
47R
47R
+5.6V
MUTE
-30V
MUTE
+5.6V
+CD
CD SUPPLY
CD STBY CONTROL
+9V
+9V REG.
+12A
HEADPHONE 32 Ohm 15mW
*220K
*220K
R-CHANNEL
L-CHANNEL
+12A
SUBWOOFER OUT
ATTN
1.5V Ro<=2K
HEADPHONE
560R
+5.6V
HP SENSE
HP_SENSE (to disable C & S)
3000mV +0.7dB 78dB
ATTN
Ri=3K
+A +C +B1
L/R 6 ohms
FRONT
RDS DECODER
TUNER CONTROL
CDC CONTROL
DPL CONTROL
I²C
MUTE
AF5 CONTROL
I²C
⊗ MUTE
HP_SENSE
CD STBY
SA
POWER CONTROL
NTC
PW_DN
AMP_ON
STBY
CLIP
AB
TAPE CONTROL
+F
-30V
IR EYE
I²C DATA
I²C CLK
uP TMP87CS71F
+F
+5.6V
FTD
F1
F2
+F
VOLUME CONTROL
+F
KEY MATRIX
EEPROM
+F
SHIFT REGISTERS X 3
SOURCE & DECK LEDS
CDC LEDS
DSC & L.S. LEDS
+F
POWER SUPPLY
+B2
+B1
+A
+C
+12A
+12M
+A L/R
+12M
+B2
+5V6
+C
-32V
NTC
F1
F2
+C
Voltage Selector
ECO
STD-BY TRAFO
N
L

LEGEND :
SK : SIMPLE KARAOKE
NK : NON KARAOKE LO : LINE-OUT
DP : DOLBY PROLOGIC

mV	AC SIGNAL LEVEL
dB	HEADROOM
dB	S/N RATIO

→ SIGNAL FLOW (MAIN & CONTROL)
⧗ : MUTE CENTER & SURROUND WHEN PLUG IN HEADPHONE

SET WIRING DIAGRAM


* DOLBY PRO-LOGIC
1504
CLK
⊥
DAT
MUTE
1409
4
* JC 1409
1502
K_IN_L
⊥a
K_IN_R
+12
K_OUT_R
⊥a
K_OUT_L
1503
CENTER
GND
SURROUND
1517
7
FRONT
CDC KEY
1476
1408
9
1402
GND-D
KEY0
KEY1
KEY2
P00*
P10*
LCDLIIT
CDCILIT
CDCILIT
JC1476 (ETF)
AD2
AD1
+5V
GND
CLK
DATA
STR
DM22 (MTF)
REC
PB
HSD
DM24
ECO5
TU95
GND
RDS
ENABLE
DATA
CLK
STEREO
JC1407
JC1474
1474
CDC3
OE-LATCH
SICL
GND
SILD
DATA
PORE
SHR-CL
STR-OUTP
SW INFO
DM23
1401 (18pin)
1403 (16pin)
HP_SENSE
MUTE
I2C_DATA
I2C_CLK
GND-D
+5v6
-30V
F2
F1
VOCAL_FADER
CD_STDBY
AMP_ON
SA
PWDN
STDBY
NTC
CLIPPING (PW5 only)
AB (PW5 Versions only)
1476
7
1404
3
1407
1474
1406
9
1706 (ETF)
1719 (MTF)
MTF/ETF6
1721(MTF)/
1703(ETF)
1709(MTF)/
1701(ETF)
1126(ECO5)/1121(TU95)
TUNER
ECO5/ TUNER 95
1124
1874
CDC3
1873
1578
2
1579
6/7
1573
4
1413
6
DM65
+12M
M ⊥
ETF
MTF
-CMOS
PB L
PB R
+12A
GND
REC L
REC R
DM56
DM59
DM52
LEFT
⊥a
RIGHT
+12
DM 53
3 CDC
LEFT
GND-A
RIGHT
+CD (+5V)
GND-M
+12M
* DM54
DM51
AUX-R
GND
AUX-L
1571
3
1505
AUX-IN
1520
LINE_R
GND
LINE_L
1514
3
LINEOUT
DM30(PW1/4)
DM31(PW5)
1503
GND-A
SUB-OUT
1575
2
SUB-WOOFER OUT
DM71
16/18
(18P for PW5 version)
AF5
1576 *
3
SIMPLE KARAOKE #
MIC
1641
# 1577
3
DM61 #
+12V
K_OUT_R
⊥a
DM57
1506(PW1&4)1525(PW5)
1510 (16-pin) 1513 (18-pin)
1580
9
1583
7/8
* 1351
1301/1211/1262
L
GND-A
R
AMP ON
+12A
GND-M
+12M
GND-D
+5V6
1263
NTC
CLIP
STBY
F1
F2
-30V
PWDN
AB
PW5
1303/1215
NTC
CLIP
STBY
F1
F2
-30V
PWDN
PW1/4
POWER MODULE
TRAFO
#: for versions with Simple Karaoke
*: for versions with Dolby Prologic
JST PH MALE
DIPMATE
JST EH MALE
JST XH MALE
BACK ENTRY FEMALE
BACK ENTRY MALE
BOARD IN
SPEAKER TERMINALS

FRONT BOARD

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Front Display part - Circuit diagram 6-3
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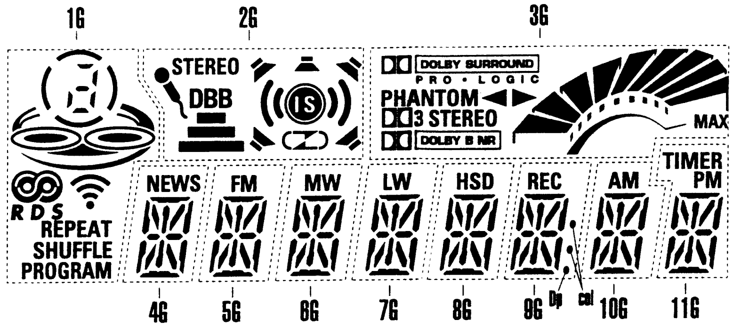
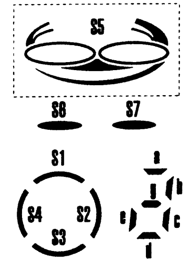
LCD DISPLAY PIN CONNECTIONS

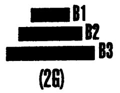


1G
2G
3G
STEREO
DBB
IS
DOLBY SURROUND
PRO · LOGIC
PHANTOM
3 STEREO
DOLBY B NR
MAX
TIMER
PM
RDS
REPEAT
SHUFFLE
PROGRAM
NEWS
FM
MW
LW
HSD
REC
AM
4G
5G
6G
7G
8G
9G
Dp
col
10G
11G

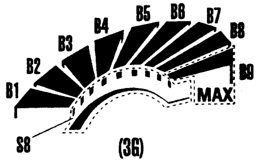


S5
S6
S7
S1
S4
S2
S3
a
b
c
d
e

(1G)

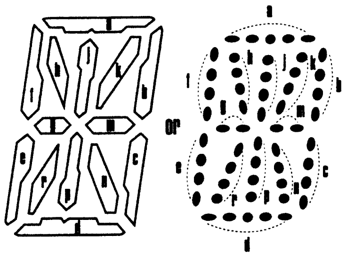


(2G)



B1
B2
B3
B4
B5
B6
B7
B8
B9
MAX
S8

(3G)

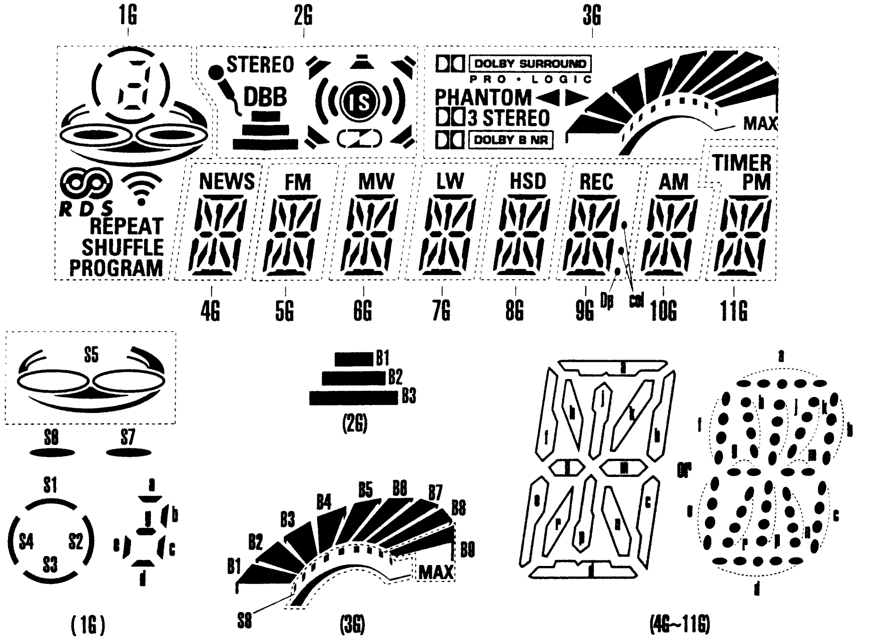


a
h
j
k
l
b
g
m
or
e
f
r
n
c
d

(4G~11G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1	S1	STEREO	DD DOLBY SURROUND PRO · LOGIC	a	a	a	a	a	a	a	a
P2	S2	DBB	PHANTOM	h	h	h	h	h	h	h	h
P3	S3	B1	DD3 STEREO	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	S4	B2	DD DOLBY B NR	k	k	k	k	k	k	k	k
P5	a , g , d	B3	B1	b	b	b	b	b	b	b	b
P6	b	◣	B2	f	f	f	f	f	f	f	f
P7	c	◤	B3	m	m	m	m	m	m	m	m
P8	e	▲	B4	g	g	g	g	g	g	g	g
P9	REPEAT	IS	B5	c	c	c	c	c	c	c	c
P10	SHUFFLE	(( ))	B6	e	e	e	e	e	e	e	e
P11	PROGRAM	◣ ◢	B7	r	r	r	r	r	r	r	r
P12	S5	Z	B8	n	n	n	n	n	n	n	n
P13	S6	)	B9	d	d	d	d	d	d	d	d
P14	S7	(	S8	NEWS	FM	MW	LW	HSD	REC	AM	TIMER
P15	RDS	🎤	▶	-	-	-	-	-	col	-	PM
P16	📶	○	◀	-	-	-	-	-	Dp	-	-

LCD DISPLAY PIN CONNECTIONS


1G
2G
3G
STEREO
DBB
DOLBY SURROUND
PRO · LOGIC
PHANTOM
3 STEREO
DOLBY B NR
MAX
TIMER
PM
RDS
REPEAT
SHUFFLE
PROGRAM
NEWS
FM
MW
LW
HSD
REC
AM
4G
5G
6G
7G
8G
9G
Dp
col
10G
11G
S5
S8
S7
B1
B2
B3
(2G)
S1
S4
S2
S3
a
b
c
d
e
(1G)
B1
B2
B3
B4
B5
B6
B7
B8
B9
MAX
S8
(3G)
a
b
c
d
e
f
g
h
j
k
m
n
p
r
Dp
col
(4G~11G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1	S1	**STEREO**	DD DOLBY SURROUND PRO · LOGIC	a	a	a	a	a	a	a	a
P2	S2	**DBB**	**PHANTOM**	h	h	h	h	h	h	h	h
P3	S3	B1	**DD3 STEREO**	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	S4	B2	DD DOLBY B NR	k	k	k	k	k	k	k	k
P5	a , g , d	B3	B1	b	b	b	b	b	b	b	b
P6	b	◥	B2	f	f	f	f	f	f	f	f
P7	c	◤	B3	m	m	m	m	m	m	m	m
P8	e	▲	B4	g	g	g	g	g	g	g	g
P9	**REPEAT**	IS	B5	c	c	c	c	c	c	c	c
P10	**SHUFFLE**	(( ))	B6	e	e	e	e	e	e	e	e
P11	**PROGRAM**	◣ ◢	B7	r	r	r	r	r	r	r	r
P12	S5	⧖	B8	n	n	n	n	n	n	n	n
P13	S6	)	B9	d	d	d	d	d	d	d	d
P14	S7	(	S8	**NEWS**	**FM**	**MW**	**LW**	**HSD**	**REC**	**AM**	**TIMER**
P15	RDS	🎤	▶	-	-	-	-	-	col	-	**PM**
P16	📶	○	◀	-	-	-	-	-	Dp	-	-

Front Boards application

A50160	FW530C/37 , FW535C/30 , FW72/37
A50150	FW530C/22/34 , FW535C/22/34 , FW538/22
A50140	FW530C/21/21M , FW535C/21/21M , FW575C/21/21M/33 , FW538/21
A50390	FW550C/22
A50520	FW560C/37
A50380	FW570C/21/21M/33
A50370	FW570C/22
A50360	FW570C/37

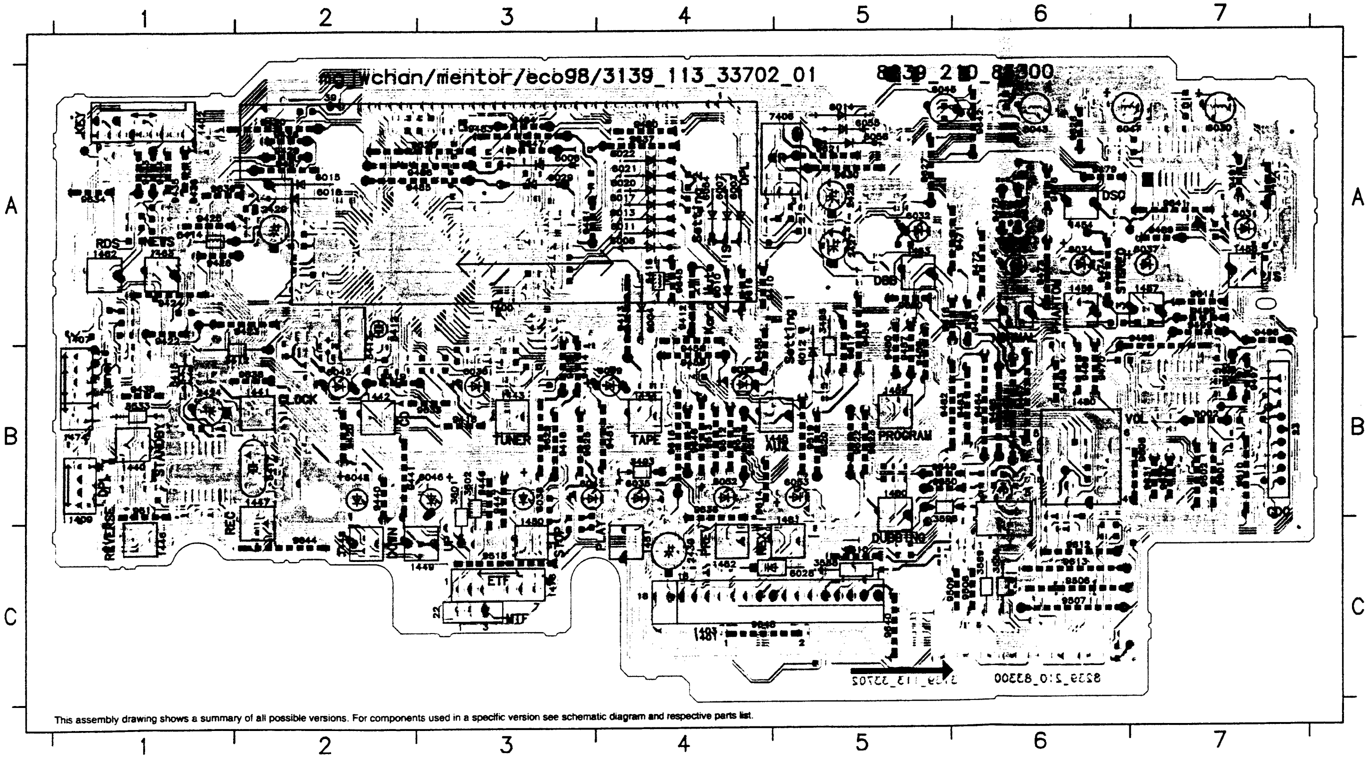
Variations table for Front Board

	A50160	A50150	A50140	A50390	A50520	A50380	A50370	A50360
22	-	-	-	-	x	-	-	-
1407	-	x	-	x	-	-	x	-
1458	x	x	x	x	-	x	x	x
1462,1463	-	x	-	x	-	-	x	-
1474	x	-	x	-	x	x	-	x
1476	x	x	x	x	-	x	x	x
2415	-	100pF	-	100pF	-	-	100pF	-
2420	-	47pF	-	47pF	-	-	47pF	-
2421,2422	-	47pF	-	47pF	-	-	47pF	-
2423	-	560pF	-	560pF	-	-	560pF	-
2424	-	2,2µF	-	2,2µF	-	-	2,2µF	-
2425	-	100nF	-	100nF	-	-	100nF	-
2438	-	560pF	-	560pF	-	-	560pF	-
3533	-	1k	-	1k	-	-	1k	-
3534	-	220k	-	220k	-	-	220k	-
3535	-	2k2	-	2k2	-	-	2k2	-
3536	10k	-	10k	-	10k	10k	-	10k
3537,3538	-	10k	-	10k	-	-	10k	-
3539	10k	-	10k	-	10k	10k	-	10k
3544	220R	220R	220R	220R	-	220R	220R	220R
3603	-	-	-	-	6k8	-	-	-
3604	-	-	-	-	8k2	-	-	-
4421	-	-	-	-	x	-	-	-
4610	-	-	-	-	-	x	-	-
4611	-	x	-	-	x	-	x	-
4612	x	x	x	-	-	x	x	x
4613	-	-	-	x	-	x	-	x
4614	x	x	x	-	x	x	x	x
4615	-	-	-	x	x	x	-	x
5415	-	x	-	x	-	-	x	-
5417	-	x	-	x	-	-	x	-
6007	-	-	-	-	x	-	-	-
6010	-	-	x	-	-	x	-	-
6012	-	-	-	x	-	x	x	x
6031	x	x	x	x	-	x	x	x
6054	-	-	-	x	x	-	-	-
7405	-	x	-	x	-	-	x	-

x = Item in use.

FRONT DISPLAY BOARD - COMPONENT VIEW

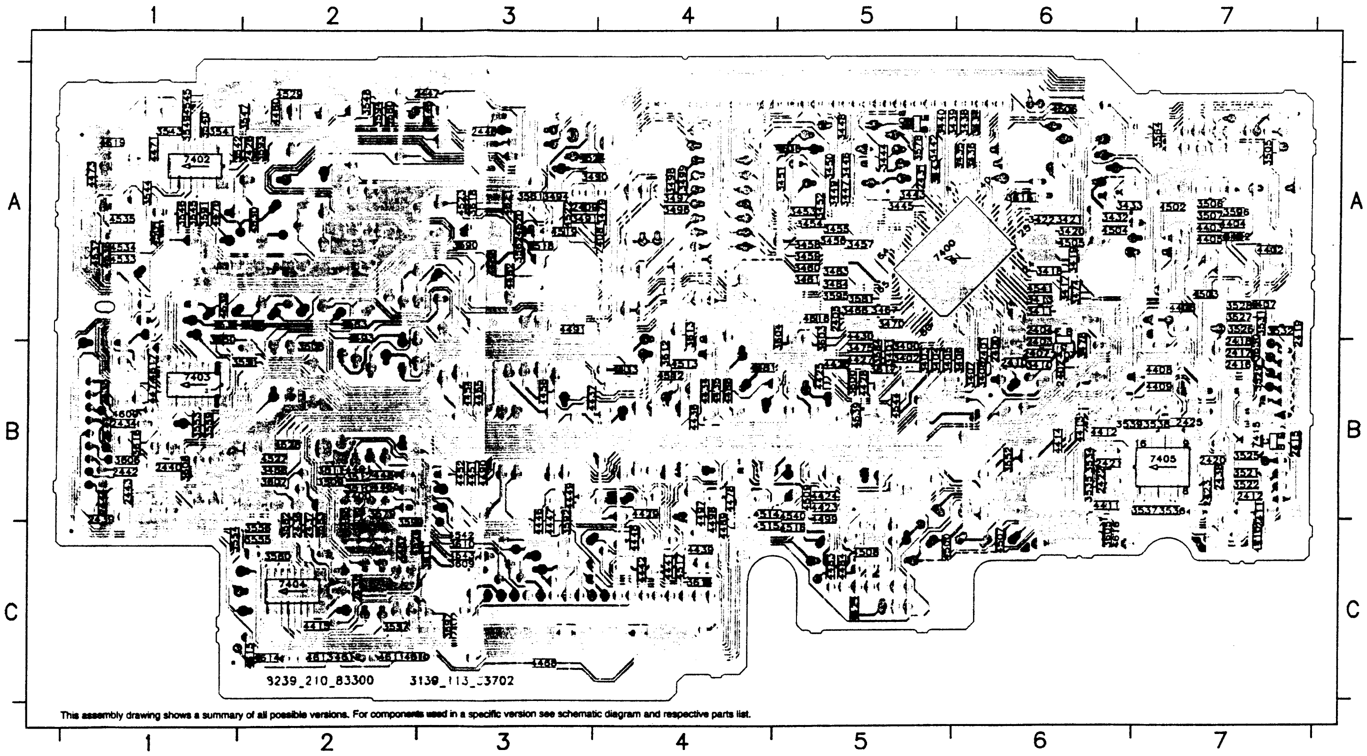
22	C3	1444	B4	1456	A6	2427	A5	3601	B3	6008	A4	6028	C5	6040	A6	6056	A5	9420	B2	9436	A1	9459	B5	9471	A6	9486	A3	9505	B7	9520	B5	9617	B5	9633	B3	9646	B4
23	B7	1445	B5	1457	A7	2428	A5	3602	B3	6010	A4	6029	A3	6041	B3	7401	B6	9422	A1	9438	B1	9460	B5	9472	A6	9487	A2	9506	C6	9521	B4	9618	A5	9634	A1	9647	A3
1400	A3	1446	C1	1458	A7	2429	A2	5412	A2	6011	A4	6030	A7	6042	B2	7406	A5	9423	A2	9440	B2	9461	A5	9473	A6	9489	A7	9507	C6	9522	B5	9621	A5	9635	A6	9648	C4
1401	C4	1447	B2	1459	B5	2430	C4	5413	B2	6012	B5	6031	A7	6043	A6	9002	B7	9424	A1	9441	B2	9462	A5	9474	A6	9491	A7	9508	C6	9523	B5	9622	B7	9636	B4	9649	B5
1402	A1	1448	C2	1460	B5	3412	B2	5414	A1	6013	A4	6032	A5	6045	A5	9410	A4	9425	A1	9446	B3	9463	B6	9475	A6	9492	A7	9509	C5	9600	A5	9623	B3	9637	A4	9650	B5
1403	C4	1449	C3	1461	B5	3493	B4	5415	B1	6014	A5	6033	B4	6046	B3	9412	A4	9426	A1	9447	B3	9464	B6	9476	A6	9495	A7	9510	C5	9610	B7	9626	A6	9638	B2		
1407	A1	1450	B3	1462	A1	3495	A5	5416	A4	6015	A2	6034	A6	6047	A6	9413	A4	9428	A2	9451	B4	9465	B6	9479	A6	9496	B7	9511	B1	9611	A7	9627	A5	9639	A1		
1409	B1	1451	C4	1463	A1	3533	B1	5417	B2	6017	A4	6035	B4	6048	B2	9414	B3	9429	A2	9453	B4	9466	B6	9480	A4	9497	B7	9512	B4	9612	C6	9628	A3	9640	C5		
1410	B1	1452	C4	1474	B1	3558	C6	6003	A4	6018	A2	6036	B3	6052	B4	9415	B3	9430	A2	9454	B4	9467	B6	9481	A3	9498	A7	9513	B4	9613	C6	9629	B3	9641	A7		
1441	B2	1453	A5	1476	C3	3588	C5	6004	A4	6020	A4	6037	A7	6053	B5	9416	B3	9433	A1	9455	B4	9468	B6	9483	A3	9499	A7	9514	B4	9614	B4	9630	A5	9642	A6		
1442	B2	1454	A6	1480	B6	3589	C6	6006	A3	6021	A4	6038	B3	6054	A4	9418	B3	9434	A1	9456	A5	9469	B6	9484	A3	9501	B7	9515	C3	9615	B4	9631	B7	9644	C2		
1443	B3	1455	A6	2424	B1	3598	B5	6007	A4	6022	A4	6039	B4	6055	A5	9419	B2	9435	A1	9457	B5	9470	B6	9485	A3	9502	B7	9519	B5	9616	A4	9632	B7	9645	A4		



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

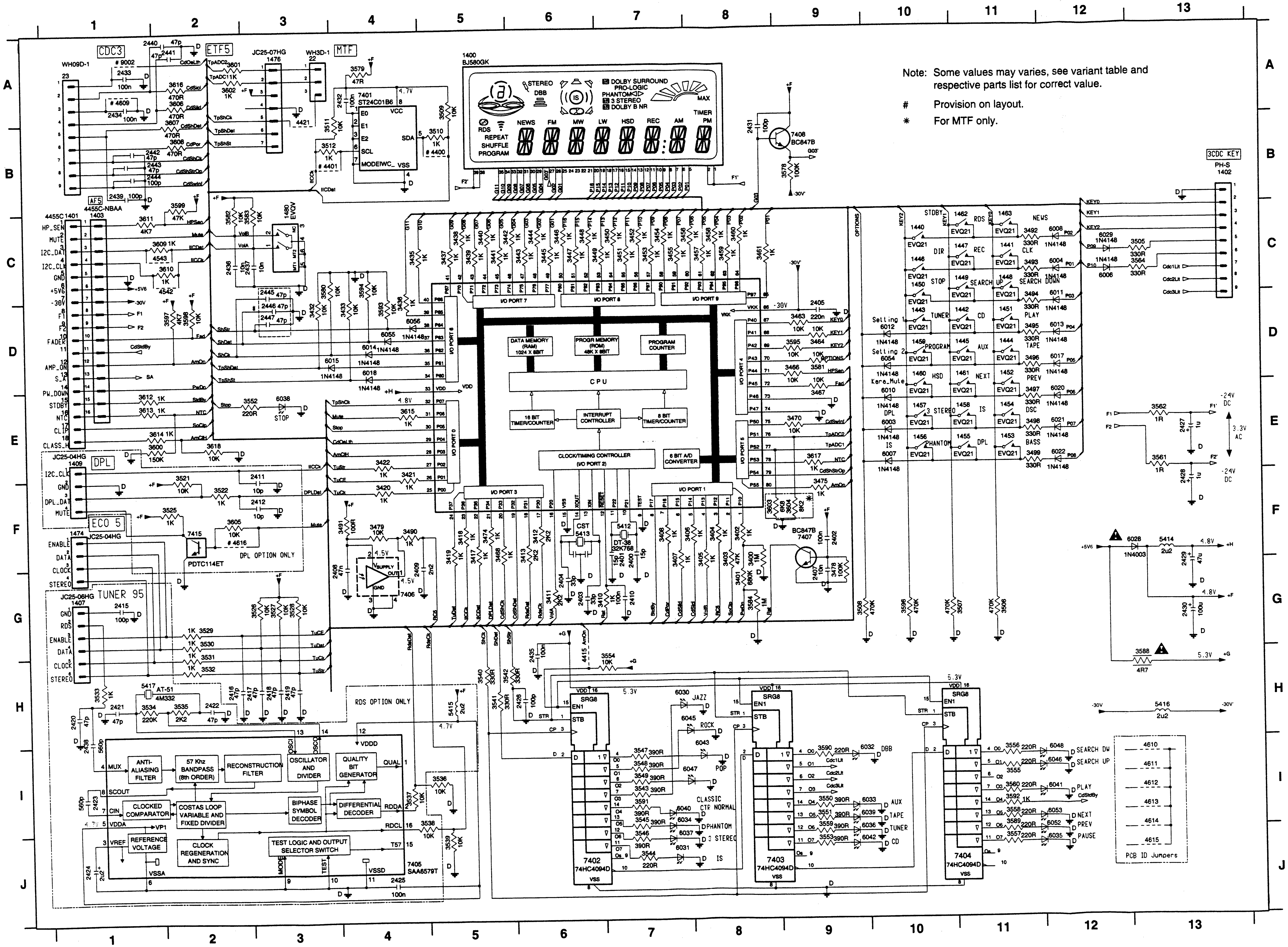
FRONT DISPLAY BOARD - COPPER SIDE VIEW

2400	B6	2420	B7	2442	B1	3413	A6	3443	A5	3460	A5	3497	A4	3529	B7	3547	A2	3579	B2	3604	A5	4402	A7	4425	B5	4451	B3	4473	A1	4502	A7	4521	A3	4539	B5	4619	A1
2401	B6	2421	B6	2443	B1	3417	A6	3444	A5	3461	A5	3498	A4	3530	B7	3548	A2	3580	A2	3605	C6	4403	A7	4426	B5	4452	B3	4474	B1	4503	A7	4522	A3	4540	B5	7400	A5
2402	B6	2422	B6	2444	B1	3418	A6	3445	A5	3463	A5	3499	A4	3531	A7	3549	A1	3581	A5	3606	B1	4404	A7	4427	B5	4454	B3	4478	B4	4504	A6	4523	A3	4541	A6	7402	A1
2403	B6	2423	B7	2445	A3	3419	A6	3446	A5	3464	A5	3505	A7	3532	A7	3550	A1	3582	C2	3607	B2	4405	A7	4428	B5	4455	B3	4479	B4	4505	A6	4524	A3	4542	C3	7403	B1
2404	A6	2425	B7	2446	A3	3420	A6	3447	A5	3466	A5	3506	A7	3534	B6	3551	B2	3583	C2	3608	B1	4406	A7	4430	A5	4456	B3	4481	B4	4506	A6	4526	C2	4543	C3	7404	C2
2405	A5	2426	A2	2447	A3	3421	A6	3448	A5	3467	A5	3507	A7	3535	B6	3552	B6	3584	B5	3609	C3	4407	A7	4433	B4	4458	A3	4483	C5	4507	C6	4527	B2	4544	B5	7405	B7
2407	B6	2431	A5	3400	B5	3422	A6	3449	A5	3468	B2	3508	B7	3536	B7	3553	B1	3590	A3	3610	C3	4408	B7	4434	B4	4460	A2	4484	C5	4508	C5	4528	B2	4545	A1	7407	B6
2408	A4	2432	B2	3401	B5	3432	A6	3450	A5	3470	A5	3509	B7	3537	B7	3554	C1	3591	A1	3611	C3	4409	B7	4435	B4	4462	A3	4486	B4	4509	B5	4529	A2	4609	B1	7408	A5
2409	A3	2433	B1	3402	B5	3433	A6	3451	A5	3474	A6	3510	B7	3538	B7	3555	C2	3592	C3	3612	B4	4410	C7	4436	B4	4463	A2	4487	B2	4512	B4	4530	A2	4610	C3	7415	B7
2410	B6	2434	B1	3403	B5	3435	A6	3452	A5	3475	B6	3511	B7	3539	B6	3556	C2	3593	A2	3613	A4	4411	B6	4437	B3	4464	A2	4490	B3	4513	B4	4531	A1	4611	C2		
2411	B7	2435	C2	3404	B5	3436	A6	3453	A5	3476	B6	3512	B7	3540	A1	3557	C2	3594	A2	3614	C4	4412	B6	4439	C4	4465	B2	4491	A3	4514	B4	4532	A1	4612	C2		
2412	B7	2436	C2	3405	B5	3437	A6	3454	A5	3479	A4	3521	B7	3541	A1	3559	B1	3595	A5	3615	A6	4413	B6	4441	C4	4466	B2	4493	A2	4515	C4	4533	A1	4613	C2		
2415	B7	2437	C2	3406	B6	3438	A6	3455	A5	3490	A3	3522	B7	3542	A1	3560	C2	3596	A7	3616	B1	4414	B6	4442	C4	4467	C2	4497	B4	4516	C5	4534	A1	4614	C2		
2416	B7	2438	B7	3407	B6	3439	A5	3456	A5	3491	A3	3525	B7	3543	A1	3561	A3	3597	C3	3617	B5	4415	C2	4446	C3	4468	C3	4498	B4	4517	C4	4535	A1	4615	C2		
2417	B7	2439	B1	3408	B6	3440	A5	3457	A5	3492	A7	3526	A7	3544	A1	3562	A3	3599	C2	3618	A3	4421	C3	4447	C3	4469	C4	4499	B5	4518	A3	4536	A1	4616	C6		
2418	B7	2440	B1	3410	B6	3441	A5	3458	A5	3494	A3	3527	A7	3545	A1	3564	A7	3600	B5	4400	B2	4423	B5	4448	C4	4470	A1	4500	C5	4519	A3	4537	A1	4617	B1		
2419	A7	2441	B1	3411	A6	3442	A5	3459	A5	3496	A4	3528	A7	3546	A1	3578	A5	3603	A5	4401	B2	4424	B5	4449	B3	4471	A1	4501	A1	4520	A3	4538	A5	4618	A5		



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

CIRCUIT DIAGRAM


CDC3
WH09D-1
ETF5
JC25-07HG
WH3D-1
MTF
7401
ST24C01B6
1400
BJ580GK
STEREO
DBB
DOLBY SURROUND
PRO-LOGIC
PHANTOM
3 STEREO
DOLBY B NR
MAX
TIMER
RDS
NEWS
FM
MW
LW
HSD
REC
AM
PM
REPEAT
SHUFFLE
PROGRAM
7408
BC847B
3CDC KEY
PH-S
1402
AF5
4455C-NBAA
4455C 1401
1403
1480
EVQV
DPL
JC25-04HG
1409
ECO 5
7415
PDTC114ET
DPL OPTION ONLY
TUNER 95
JC25-06HG
1407
I/O PORT 7
I/O PORT 8
I/O PORT 9
DATA MEMORY (RAM) 1024 X 8BIT
PROGR MEMORY (ROM) 48K X 8BIT
PROGRAM COUNTER
CPU
16 BIT TIMER/COUNTER
INTERRUPT CONTROLLER
8 BIT TIMER/COUNTER
CLOCK/TIMING CONTROLLER (I/O PORT 2)
6 BIT A/D CONVERTER
I/O PORT 3
I/O PORT 1
I/O PORT 6
I/O PORT 0
I/O PORT 4
I/O PORT 5
7406
7407
BC847B
CST 5413
DT-38 32K768
RDS OPTION ONLY
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
7405
SAA6579T
SRG8
7402
74HC4094D
7403
74HC4094D
7404
74HC4094D
JAZZ
ROCK
POP
CLASSIC
CTF NORMAL
PHANTOM
3 STEREO
IS
DBB
AUX
TAPE
TUNER
CD
SEARCH DW
SEARCH UP
PLAY
NEXT
PREV
PAUSE
STDBY
RDS
NEWS
DIR
REC
CLK
STOP
SEARCH UP
SEARCH DOWN
TUNER
CD
PLAY
PROGRAM
AUX
TAPE
HSD
NEXT
PREV
STEREO
IS
DSC
PHANTOM
DPL
BASS
Setting 1
Setting 2
Kara_Mute
1N4148
EVQ21
-24V DC
3.3V AC
4.8V
5.3V
1N4003
PCB ID Jumpers
4610
4611
4612
4613
4614
4615

Note: Some values may varies, see variant table and respective parts list for correct value.

# Provision on layout.

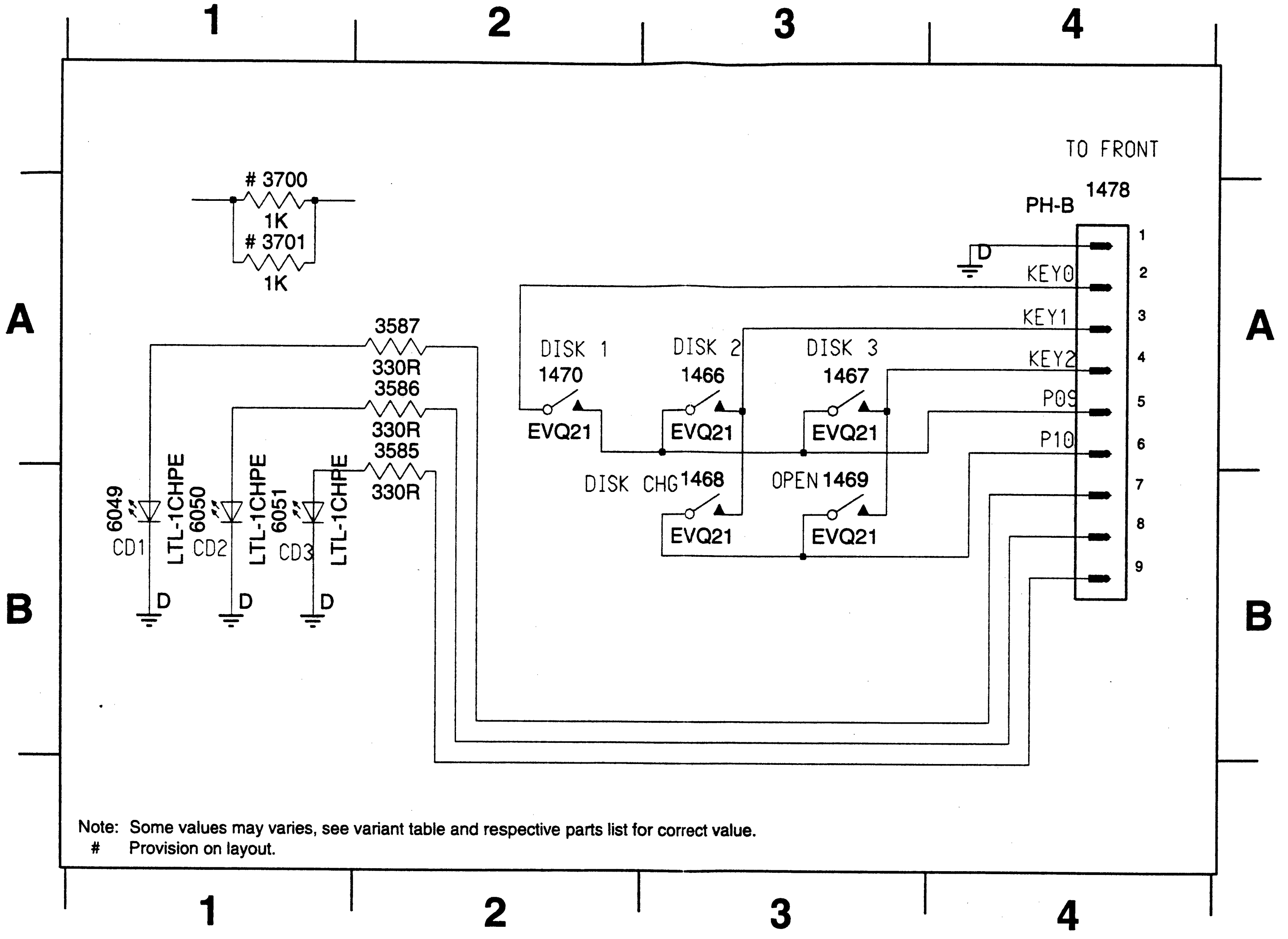
* For MTF only.

22	A3
23	A1
1400	A5
1401	C1
1402	B13
1403	C1
1407	G1
1409	E1
1440	C10
1441	C11
1442	D11
1443	D10
1444	D11
1445	D11
1446	C10
1447	C11
1448	C11
1449	C11
1450	C10
1451	D11
1452	D11
1453	E11
1454	E11
1455	E11
1456	E10
1457	E10
1458	E11
1459	D10
1460	D10
1461	D11
1462	C11
1463	C11
1474	F1
1476	A3
1480	C3
2400	F7
2401	F7
2402	F9
2403	G6
2404	G6
2405	D9
2407	G9
2408	G3
2409	G4
2410	G7
2411	E3
2412	F3
2415	G1
2416	H2
2417	H2
2418	H3
2419	H3
2420	H1
2421	H1
2422	H2
2423	I1
2424	J1
2425	J4
2426	H6
2427	E13
2428	F13
2429	G13
2430	G13
2431	B8
2432	A4
2433	A1
2434	A1
2435	H6
2436	C2
2437	C3
2438	H1
2439	B1
2440	A1
2441	A2
2442	B2
2443	B2
2444	B2
2445	C3
2446	D3
2447	D3
3400	F8
3401	G8
3402	F8
3403	F8
3404	F8
3405	F8
3406	F8
3407	F7
3408	F7
3410	G6
3411	G6
3412	F6
3413	F6
3417	F5
3418	F5
3419	F5
3420	F4
3421	E4
3422	E4
3432	D3
3433	D4
3435	C4
3436	D4
3437	C5
3438	C5
3439	C5
3440	C5
3441	C5
3442	C6
3443	C6
3444	C6
3445	C6
3446	C6
3447	C6
3448	C6
3449	C7
3450	C7
3451	C7
3452	C7
3453	C7
3454	C7
3455	C7
3456	C8
3457	C8
3458	C8
3459	C8
3460	C8
3461	C8
3463	D9
3464	D9
3466	D9
3467	E9
3468	F5
3470	E9
3474	F5
3475	F9
3478	G9
3479	F4
3490	F4
3491	F4
3492	C11
3493	C11
3494	D11
3495	D11
3496	D11
3497	E11
3498	E11
3499	E11
3505	C13
3506	G11
3507	G11
3508	G9
3509	A5
3510	B5
3511	B3
3512	B3
3521	E2
3522	F2
3525	F2
3526	G3
3527	G3
3528	G3
3529	G2
3530	G2
3531	G2
3532	H2
3533	H1
3534	H1
3535	H2
3536	I5
3537	I4
3538	I4
3539	J5
3540	H5
3541	H5
3542	H5
3543	I7
3544	J7
3545	I7
3546	J7
3547	I7
3548	I7
3549	I7
3550	I9
3551	I9
3552	E3
3553	J9
3554	H7
3555	I11
3556	I11
3557	J11
3558	I11
3559	I9
3560	I11
3561	E13
3562	E13
3564	C13
3578	B9
3579	A4
3580	C3
3581	D9
3582	C2
3583	C3
3584	G8
3588	H13
3589	I11
3590	I9
3591	I7
3592	I11
3593	D4
3594	C4
3595	D9
3596	G10
3597	D2
3598	D2
3599	B2
3600	E1
3601	A2
3602	A2
3603	F8
3604	F9
3605	F2
3606	A2
3607	A2
3608	B2
3609	C2
3610	C2
3611	C1
3612	E1
3613	E1
3614	E1
3615	E4
3616	A2
3617	E9
3618	E2
4400	B5
4401	B3
4415	H6
4421	B3
4542	C2
4543	C2
4609	A1
4610	I13
4611	I13
4612	I13
4613	I13
4614	J13
4615	J13
4616	F2
5412	F7
5413	F6
5414	F13
5415	H5
5416	H13
5417	H1
6003	E10
6004	C12
6006	C12
6007	E10
6008	C12
6010	E10
6011	D12
6012	D10
6013	D12
6014	D4
6015	D3
6017	D12
6018	D4
6020	E12
6021	E12
6022	E12
6028	F13
6029	C12
6030	H7
6031	J7
6032	I9
6033	I9
6034	I7
6035	J12
6036	I9
6037	J7
6038	E3
6039	I9
6040	I7
6041	I12
6042	J9
6043	I8
6045	H7
6046	I12
6047	I7
6048	I12
6052	I12
6053	I12
6054	D10
6055	D4
6056	D4
7400	F4
7401	A4
7402	J6
7403	J9
7404	J11
7405	J4
7406	G4
7407	F9
7408	B9
7415	F2
9002	A1

KEY-CDC PART

1466	A3
1467	A3
1468	B3
1469	B3
1470	A2
1478	A4
3585	A2
3586	A2
3587	A2
3700	A1
3701	A1
6049	B1
6050	B1
6051	B1

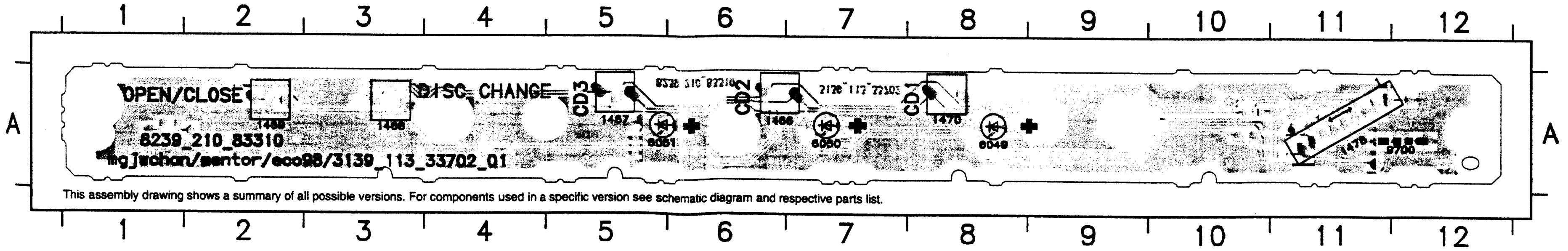
CIRCUIT DIAGRAM - KEY-CDC PART


1
2
3
4
A
B
TO FRONT
1478
PH-B
1
2
3
4
5
6
7
8
9
KEY0
KEY1
KEY2
P09
P10
D
# 3700
1K
# 3701
1K
3587
330R
3586
330R
3585
330R
6049
CD1
LTL-1CHPE
6050
CD2
LTL-1CHPE
6051
CD3
LTL-1CHPE
D
D
D
DISK 1
1470
EVQ21
DISK 2
1466
EVQ21
DISK 3
1467
EVQ21
DISK CHG 1468
EVQ21
OPEN 1469
EVQ21

Note: Some values may varies, see variant table and respective parts list for correct value.
# Provision on layout.

1466	A6
1467	A5
1468	A3
1469	A2
1470	A8
1478	A11
6049	A8
6050	A7
6051	A5
9700	A12

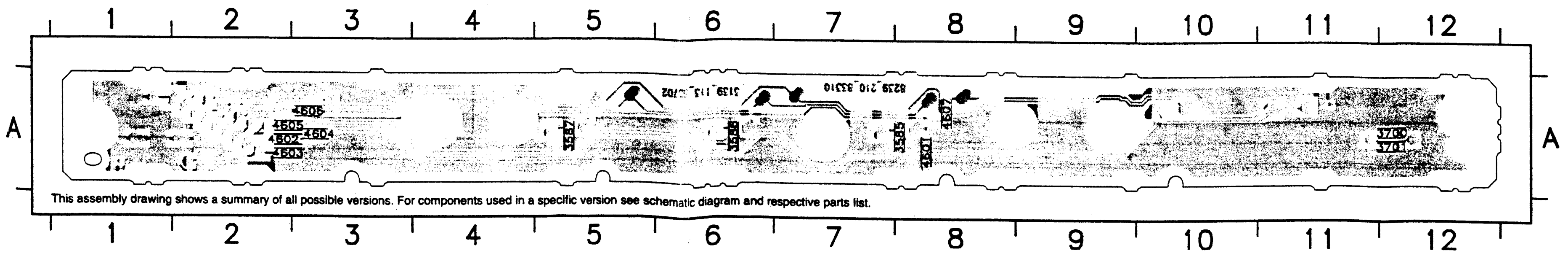
KEY-CDC BOARD - COMPONENT VIEW


1
2
3
4
5
6
7
8
9
10
11
12
A
OPEN/CLOSE
DISC CHANGE
8239_210_83310
mgjschan/mentor/eco98/3139_113_33702_01
1469
1468
1467
1466
1470
CD3
CD2
CD1
6051
6050
6049
1478
9700

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3585	A8
3586	A6
3587	A5
3700	A12
3701	A12
4601	A8
4602	A2
4603	A2
4604	A3
4605	A2
4606	A3
4607	A8

KEY-CDC BOARD - COPPER SIDE VIEW


1
2
3
4
5
6
7
8
9
10
11
12
A
4606
4605
4602
4604
4603
3587
3586
3585
4601
4607
3700
3701

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	4822 135 00177	FTD Display (Dot Matrix)
1403	4822 267 51238	Connector 16 Pin
1440	4822 276 13114	Tact Switch
1441	4822 276 13114	Tact Switch
1442	4822 276 13114	Tact Switch
1443	4822 276 13114	Tact Switch
1444	4822 276 13114	Tact Switch
1445	4822 276 13114	Tact Switch
1446	4822 276 13114	Tact Switch
1447	4822 276 13114	Tact Switch
1448	4822 276 13114	Tact Switch
1449	4822 276 13114	Tact Switch
1450	4822 276 13114	Tact Switch
1451	4822 276 13114	Tact Switch
1452	4822 276 13114	Tact Switch
1453	4822 276 13114	Tact Switch
1454	4822 276 13114	Tact Switch
1458	4822 276 13114	Tact Switch
1459	4822 276 13114	Tact Switch
1460	4822 276 13114	Tact Switch
1461	4822 276 13114	Tact Switch
1462	4822 276 13114	Tact Switch
1463	4822 276 13114	Tact Switch
1466	4822 276 13114	Tact Switch
1467	4822 276 13114	Tact Switch
1468	4822 276 13114	Tact Switch
1469	4822 276 13114	Tact Switch
1470	4822 276 13114	Tact Switch
1480	4822 101 21261	Rot Encoder 24P

CAPACITORS

2400	4822 122 32504	15pF 2% 50V
2401	4822 122 32504	15pF 2% 50V
2402	4822 126 10002	100nF20% 25V
2403	5322 122 32659	33pF 5% 50V
2404	5322 122 32659	33pF 5% 50V
2405	4822 126 13473	220nF+80/-20% 50V
2407	4822 122 33177	10nF 20% 50V
2408	4822 126 13751	47nF10% 63V
2409	4822 122 33175	2,2nF 20% 50V
2410	4822 126 10002	100nF20% 25V
2415	5322 122 32531	100pF 5% 50V
2416	4822 126 13692	47pF 1% 63V
2417	4822 126 13692	47pF 1% 63V
2418	4822 126 13692	47pF 1% 63V
2419	4822 126 13692	47pF 1% 63V
2420	4822 126 13692	47pF 1% 63V
2421	4822 126 13692	47pF 1% 63V
2422	4822 126 13692	47pF 1% 63V
2423	4822 122 33173	560pF 10% 50V
2424	4822 124 41576	2,2µF 20% 50V
2425	4822 126 13296	100nF10% 16V
2426	5322 122 32531	100pF 5% 50V
2427	4822 124 40242	1µF20% 63V
2428	4822 124 40242	1µF20% 63V
2429	4822 124 80483	47µF20% 6,3V
2430	4822 124 42446	100µF20% 10V
2431	5322 122 32531	100pF 5% 50V
2432	4822 126 10002	100nF20% 25V
2433	4822 126 13296	100nF10% 16V
2434	4822 126 13296	100nF10% 16V
2435	4822 126 13296	100nF10% 16V
2436	4822 122 33177	10nF 20% 50V
2437	4822 122 33177	10nF 20% 50V
2438	4822 122 33173	560pF 10% 50V
2439	5322 122 32531	100pF 5% 50V
2440	4822 126 13692	47pF 1% 63V
2441	4822 126 13692	47pF 1% 63V
2442	4822 126 13692	47pF 1% 63V
2443	4822 126 13692	47pF 1% 63V
2444	5322 122 32531	100pF 5% 50V

RESISTORS

3400	4822 051 20105	1M 5% 0,1W
3401	4822 051 20684	680k 5% 0,1W
3402	4822 051 10102	1k 2% 0,25W
3403	4822 117 10834	47k 1% 0,1W
3404	4822 051 10102	1k 2% 0,25W
3405	4822 051 10102	1k 2% 0,25W
3406	4822 051 10102	1k 2% 0,25W
3407	4822 051 10102	1k 2% 0,25W
3408	4822 051 10102	1k 2% 0,25W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 117 11449	2k2 1% 0,1W
3412	4822 116 52256	2k2 5% 0,5W
3413	4822 117 11449	2k2 1% 0,1W
3417	4822 051 10102	1k 2% 0,25W
3418	4822 051 10102	1k 2% 0,25W
3419	4822 051 10102	1k 2% 0,25W
3420	4822 051 10102	1k 2% 0,25W
3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3432	4822 117 10833	10k 1% 0,1W
3433	4822 117 10833	10k 1% 0,1W
3435	4822 051 10102	1k 2% 0,25W
3436	4822 051 10102	1k 2% 0,25W
3437	4822 051 10102	1k 2% 0,25W
3438	4822 051 10102	1k 2% 0,25W
3439	4822 051 10102	1k 2% 0,25W
3440	4822 051 10102	1k 2% 0,25W
3441	4822 051 10102	1k 2% 0,25W
3442	4822 051 10102	1k 2% 0,25W
3443	4822 051 10102	1k 2% 0,25W
3444	4822 051 10102	1k 2% 0,25W

ELECTRICAL PARTS LIST - FRONT BOARD

3445	4822 051 10102	1k 2% 0,25W
3446	4822 051 10102	1k 2% 0,25W
3447	4822 051 10102	1k 2% 0,25W
3448	4822 051 10102	1k 2% 0,25W
3449	4822 051 10102	1k 2% 0,25W
3450	4822 051 10102	1k 2% 0,25W
3451	4822 051 10102	1k 2% 0,25W
3452	4822 051 10102	1k 2% 0,25W
3453	4822 051 10102	1k 2% 0,25W
3454	4822 051 10102	1k 2% 0,25W
3455	4822 051 10102	1k 2% 0,25W
3456	4822 051 10102	1k 2% 0,25W
3457	4822 051 10102	1k 2% 0,25W
3458	4822 051 10102	1k 2% 0,25W
3459	4822 051 10102	1k 2% 0,25W
3460	4822 051 10102	1k 2% 0,25W
3461	4822 051 10102	1k 2% 0,25W
3463	4822 117 10833	10k 1% 0,1W
3464	4822 117 10833	10k 1% 0,1W
3466	4822 117 10833	10k 1% 0,1W
3467	4822 117 10833	10k 1% 0,1W
3468	4822 051 10102	1k 2% 0,25W
3470	4822 117 10833	10k 1% 0,1W
3474	4822 051 10102	1k 2% 0,25W
3475	4822 051 10102	1k 2% 0,25W
3478	4822 051 20104	100k 5% 0,1W
3479	4822 117 10833	10k 1% 0,1W
3490	4822 051 10102	1k 2% 0,25W
3491	4822 051 20101	100R 5% 0,1W
3492	4822 051 20331	330R 5% 0,1W
3493	4822 116 52219	330R 5% 0,5W
3494	4822 051 20331	330R 5% 0,1W
3495	4822 116 52219	330R 5% 0,5W
3496	4822 051 20331	330R 5% 0,1W
3497	4822 051 20331	330R 5% 0,1W
3498	4822 051 20331	330R 5% 0,1W
3499	4822 051 20331	330R 5% 0,1W
3505	4822 051 20331	330R 5% 0,1W
3506	4822 051 20474	470k 5% 0,1W
3507	4822 051 20474	470k 5% 0,1W
3508	4822 051 20474	470k 5% 0,1W
3509	4822 117 10833	10k 1% 0,1W
3510	4822 051 10102	1k 2% 0,25W
3511	4822 117 10833	10k 1% 0,1W
3512	4822 051 10102	1k 2% 0,25W
3526	4822 117 10833	10k 1% 0,1W
3527	4822 117 10833	10k 1% 0,1W
3528	4822 117 10833	10k 1% 0,1W
3529	4822 051 10102	1k 2% 0,25W
3530	4822 051 10102	1k 2% 0,25W
3531	4822 051 10102	1k 2% 0,25W
3532	4822 051 10102	1k 2% 0,25W
3533	4822 050 11002	1k 1% 0,4W
3534	4822 051 20224	220k 5% 0,1W
3535	4822 117 11449	2k2 1% 0,1W
3536	4822 117 10833	10k 1% 0,1W
3537	4822 117 10833	10k 1% 0,1W
3538	4822 117 10833	10k 1% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3540	4822 051 20331	330R 5% 0,1W
3541	4822 051 20331	330R 5% 0,1W
3542	4822 051 20331	330R 5% 0,1W
3543	4822 051 20391	390R 5% 0,1W
3544	4822 117 11503	220R 1% 0.1W
3547	4822 051 20391	390R 5% 0,1W
3548	4822 051 20391	390R 5% 0,1W
3549	4822 051 20391	390R 5% 0,1W
3550	4822 051 20391	390R 5% 0,1W
3551	4822 051 20391	390R 5% 0,1W
3552	4822 117 11503	220R 1% 0.1W
3553	4822 051 20391	390R 5% 0,1W
3554	4822 117 10833	10k 1% 0,1W
3555	4822 117 11503	220R 1% 0.1W
3556	4822 117 11503	220R 1% 0.1W
3557	4822 117 11503	220R 1% 0.1W
3558	4822 116 83872	220R 5% 0,5W
3559	4822 051 20391	390R 5% 0,1W
3560	4822 117 11503	220R 1% 0.1W
3561	4822 051 20108	1R 5% 0,1W
3562	4822 051 20108	1R 5% 0,1W
3564	4822 051 20331	330R 5% 0,1W
3578	4822 051 20104	100k 5% 0,1W
3579	4822 051 20479	47R 5% 0,1W
3580	4822 117 10833	10k 1% 0,1W
3581	4822 117 10833	10k 1% 0,1W
3582	4822 117 10833	10k 1% 0,1W
3583	4822 117 10833	10k 1% 0,1W
3584	4822 051 20105	1M 5% 0,1W
3585	4822 051 20331	330R 5% 0,1W
3586	4822 051 20331	330R 5% 0,1W
3587	4822 051 20331	330R 5% 0,1W
3588	4822 052 10478 ⚠	4R7 5% 0,33W
3589	4822 116 83872	220R 5% 0,5W
3590	4822 117 11503	220R 1% 0.1W
3592	4822 051 10102	1k 2% 0,25W
3593	4822 117 10833	10k 1% 0,1W
3594	4822 117 10833	10k 1% 0,1W
3595	4822 117 10833	10k 1% 0,1W
3596	4822 051 20474	470k 5% 0,1W
3597	4822 117 10833	10k 1% 0,1W
3598	4822 116 83864	10k 5% 0,5W
3599	4822 117 10834	47k 1% 0,1W
3600	4822 051 20154	150k 5% 0,1W
3601	4822 050 11002	1k 1% 0,4W

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3602	4822 050 11002	1k 1% 0,4W
3606	4822 051 20471	470R 5% 0,1W
3607	4822 051 20471	470R 5% 0,1W
3608	4822 051 20471	470R 5% 0,1W
3609	4822 051 10102	1k 2% 0,25W
3610	4822 051 10102	1k 2% 0,25W
3611	4822 051 20472	4k7 5% 0,1W
3612	4822 051 10102	1k 2% 0,25W
3613	4822 051 10102	1k 2% 0,25W
3614	4822 051 10102	1k 2% 0,25W
3615	4822 051 10102	1k 2% 0,25W
3616	4822 051 20471	470R 5% 0,1W
3617	4822 051 10102	1k 2% 0,25W
3618	4822 117 10833	10k 1% 0,1W
4402	4822 051 20008	0R Jumper 0805
4403	4822 051 20008	0R Jumper 0805
4404	4822 051 20008	0R Jumper 0805
4405	4822 051 20008	0R Jumper 0805
4406	4822 051 20008	0R Jumper 0805
4407	4822 051 20008	0R Jumper 0805
4408	4822 051 20008	0R Jumper 0805
4409	4822 051 20008	0R Jumper 0805
4410	4822 051 20008	0R Jumper 0805
4411	4822 051 20008	0R Jumper 0805
4412	4822 051 20008	0R Jumper 0805
4413	4822 051 20008	0R Jumper 0805
4414	4822 051 20008	0R Jumper 0805
4423	4822 051 20008	0R Jumper 0805
4424	4822 051 20008	0R Jumper 0805
4425	4822 051 20008	0R Jumper 0805
4426	4822 051 20008	0R Jumper 0805
4427	4822 051 20008	0R Jumper 0805
4428	4822 051 20008	0R Jumper 0805
4430	4822 051 20008	0R Jumper 0805
4433	4822 051 20008	0R Jumper 0805
4434	4822 051 20008	0R Jumper 0805
4435	4822 051 20008	0R Jumper 0805
4436	4822 051 20008	0R Jumper 0805
4437	4822 051 20008	0R Jumper 0805
4439	4822 051 20008	0R Jumper 0805
4441	4822 051 20008	0R Jumper 0805
4442	4822 051 20008	0R Jumper 0805
4446	4822 051 20008	0R Jumper 0805
4447	4822 051 20008	0R Jumper 0805
4448	4822 051 20008	0R Jumper 0805
4449	4822 051 20008	0R Jumper 0805
4451	4822 051 20008	0R Jumper 0805
4452	4822 051 20008	0R Jumper 0805
4454	4822 051 20008	0R Jumper 0805
4455	4822 051 20008	0R Jumper 0805
4456	4822 051 20008	0R Jumper 0805
4458	4822 051 20008	0R Jumper 0805
4460	4822 051 20008	0R Jumper 0805
4462	4822 051 20008	0R Jumper 0805
4463	4822 051 20008	0R Jumper 0805
4464	4822 051 20008	0R Jumper 0805
4465	4822 051 20008	0R Jumper 0805
4466	4822 051 20008	0R Jumper 0805
4467	4822 051 20008	0R Jumper 0805
4468	4822 051 20008	0R Jumper 0805
4469	4822 051 20008	0R Jumper 0805
4470	4822 051 20008	0R Jumper 0805
4471	4822 051 20008	0R Jumper 0805
4473	4822 051 20008	0R Jumper 0805
4474	4822 051 20008	0R Jumper 0805
4478	4822 051 20008	0R Jumper 0805
4479	4822 051 20008	0R Jumper 0805
4481	4822 051 20008	0R Jumper 0805
4483	4822 051 20008	0R Jumper 0805
4484	4822 051 20008	0R Jumper 0805
4486	4822 051 20008	0R Jumper 0805
4487	4822 051 20008	0R Jumper 0805
4490	4822 051 20008	0R Jumper 0805
4491	4822 051 20008	0R Jumper 0805
4493	4822 051 20008	0R Jumper 0805
4497	4822 051 20008	0R Jumper 0805
4498	4822 051 20008	0R Jumper 0805
4499	4822 051 20008	0R Jumper 0805
4500	4822 051 20008	0R Jumper 0805
4501	4822 051 20008	0R Jumper 0805
4502	4822 051 20008	0R Jumper 0805
4503	4822 051 20008	0R Jumper 0805
4504	4822 051 20008	0R Jumper 0805
4505	4822 051 20008	0R Jumper 0805
4506	4822 051 20008	0R Jumper 0805
4507	4822 051 20008	0R Jumper 0805
4508	4822 051 20008	0R Jumper 0805
4509	4822 051 20008	0R Jumper 0805
4512	4822 051 20008	0R Jumper 0805
4513	4822 051 20008	0R Jumper 0805
4514	4822 051 20008	0R Jumper 0805
4515	4822 051 20008	0R Jumper 0805
4516	4822 051 20008	0R Jumper 0805
4517	4822 051 20008	0R Jumper 0805
4518	4822 051 20008	0R Jumper 0805
4519	4822 051 20008	0R Jumper 0805
4520	4822 051 20008	0R Jumper 0805
4521	4822 051 20008	0R Jumper 0805
4522	4822 051 20008	0R Jumper 0805
4523	4822 051 20008	0R Jumper 0805
4524	4822 051 20008	0R Jumper 0805
4526	4822 051 20008	0R Jumper 0805
4527	4822 051 20008	0R Jumper 0805
4528	4822 051 20008	0R Jumper 0805
4529	4822 051 20008	0R Jumper 0805
4530	4822 051 20008	0R Jumper 0805
4531	4822 051 20008	0R Jumper 0805
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 20008	0R Jumper 0805
4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4544	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4601	4822 051 20008	0R Jumper 0805
4602	4822 051 20008	0R Jumper 0805
4603	4822 051 20008	0R Jumper 0805
4604	4822 051 20008	0R Jumper 0805
4605	4822 051 20008	0R Jumper 0805
4606	4822 051 20008	0R Jumper 0805
4607	4822 051 20008	0R Jumper 0805
4610	4822 051 20008	0R Jumper 0805
4611	4822 051 20008	0R Jumper 0805
4612	4822 051 20008	0R Jumper 0805
4613	4822 051 20008	0R Jumper 0805
4614	4822 051 20008	0R Jumper 0805
4615	4822 051 20008	0R Jumper 0805
4617	4822 051 20008	0R Jumper 0805
4618	4822 051 20008	0R Jumper 0805
4619	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5412	4822 242 70938	X'tal Resonator 32,768kHZ
5413	4822 242 72066	Ceramic Resonator
5414	4822 157 11477	Fixed Inductor 2µ2 5%
5415	4822 157 11477	Fixed Inductor 2µ2 5%
5416	4822 157 11477	Fixed Inductor 2µ2 5%
5417	4822 242 72195	QUARZ 4,332 MHZ

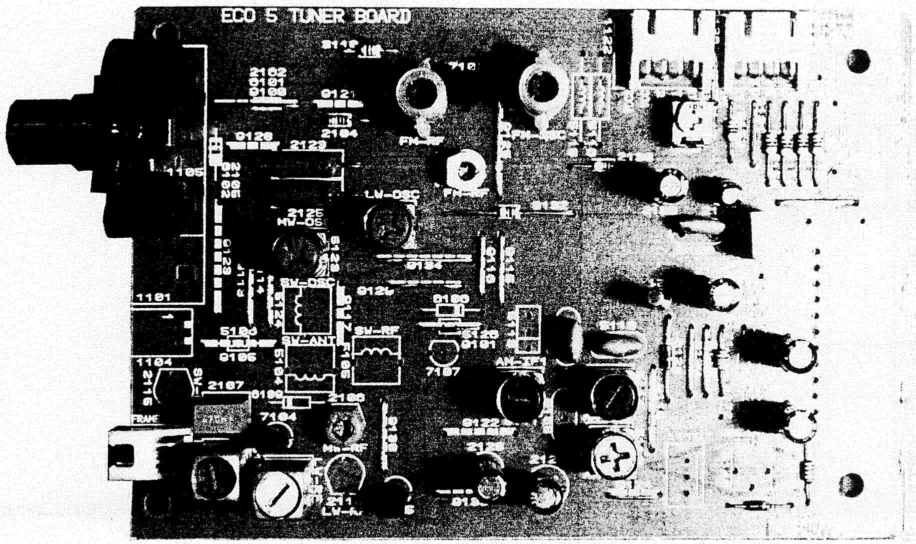
DIODES

6004	4822 130 30621	1N4148
6006	4822 130 30621	1N4148
6008	4822 130 30621	1N4148
6010	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6012	4822 130 30621	1N4148
6013	4822 130 30621	1N4148
6014	4822 130 30621	1N4148
6015	4822 130 30621	1N4148
6017	4822 130 30621	1N4148
6018	4822 130 30621	1N4148
6020	4822 130 30621	1N4148
6021	4822 130 30621	1N4148
6022	4822 130 30621	1N4148
6028	4822 130 31878 △	1N4003G
6029	4822 130 30621	1N4148
6030	4822 130 83119	LTL-307C
6031	4822 130 10791	LTL-1CHGE
6032	4822 130 10791	LTL-1CHGE
6033	4822 130 10792	LTL-1CHPE
6035	4822 130 10791	LTL-1CHGE
6036	4822 130 10792	LTL-1CHPE
6038	4822 130 10791	LTL-1CHGE
6039	4822 130 10792	LTL-1CHPE
6041	4822 130 10791	LTL-1CHGE
6042	4822 130 10792	LTL-1CHPE
6043	4822 130 83119	LTL-307C
6045	4822 130 83119	LTL-307C
6046	4822 130 10791	LTL-1CHGE
6047	4822 130 83119	LTL-307C
6048	4822 130 10791	LTL-1CHGE
6049	4822 130 10792	LTL-1CHPE
6050	4822 130 10792	LTL-1CHPE
6051	4822 130 10792	LTL-1CHPE
6052	4822 130 10791	LTL-1CHGE
6053	4822 130 10791	LTL-1CHGE
6055	4822 130 30621	1N4148
6056	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 16158	TMP87CS71F - '530S51611' for /37
7400	4822 209 16223	TMP87CS71F - '530S51661'
7401	4822 209 31508	ST24C01B1
7402	4822 209 15449	74HC4094D
7403	4822 209 15449	74HC4094D
7404	4822 209 15449	74HC4094D
7405	4822 209 31981	SAA6579T
7406	4822 130 10165	GP1U28XP
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.


ECO 5 TUNER BOARD

TUNER BOARD ECO5

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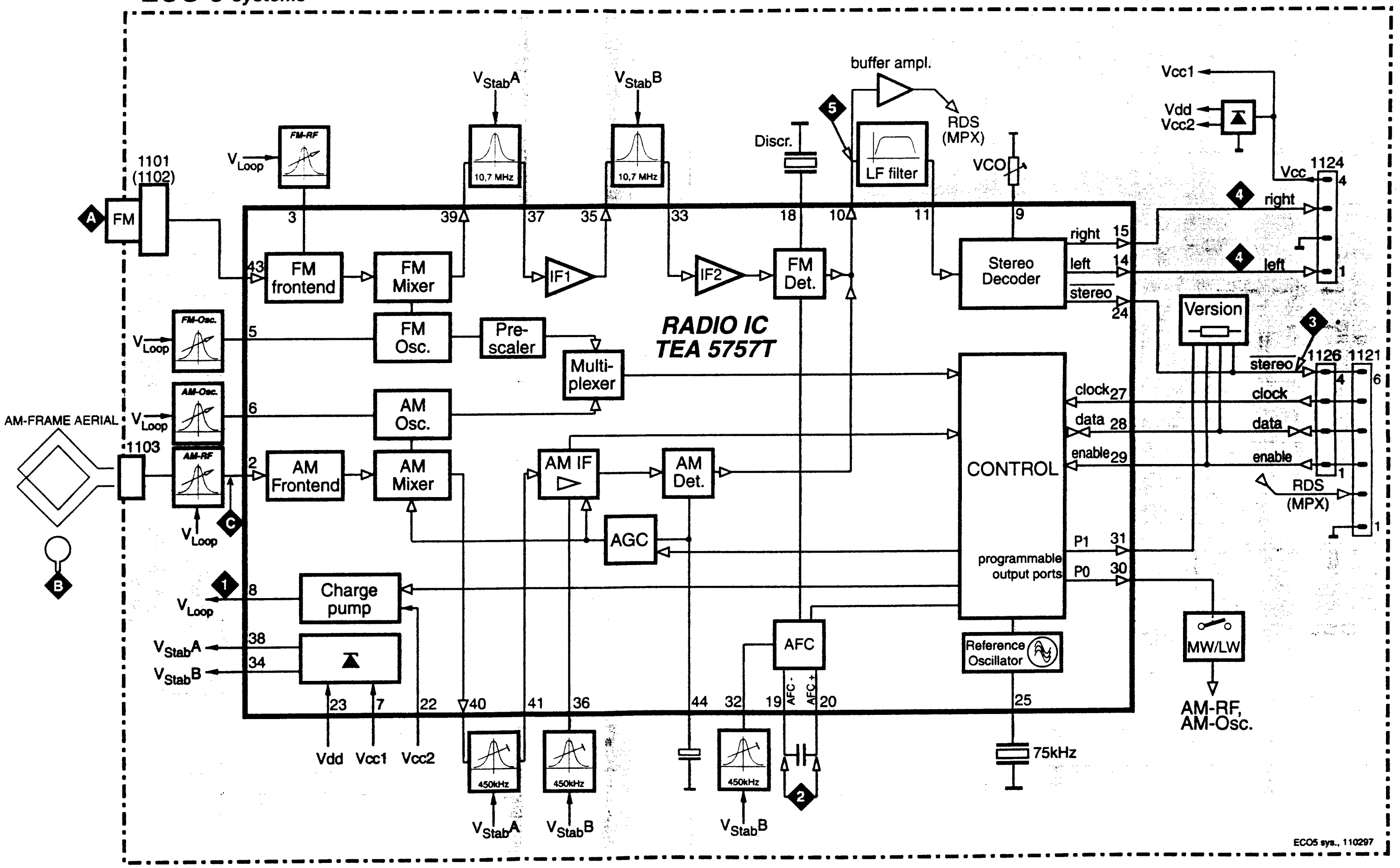
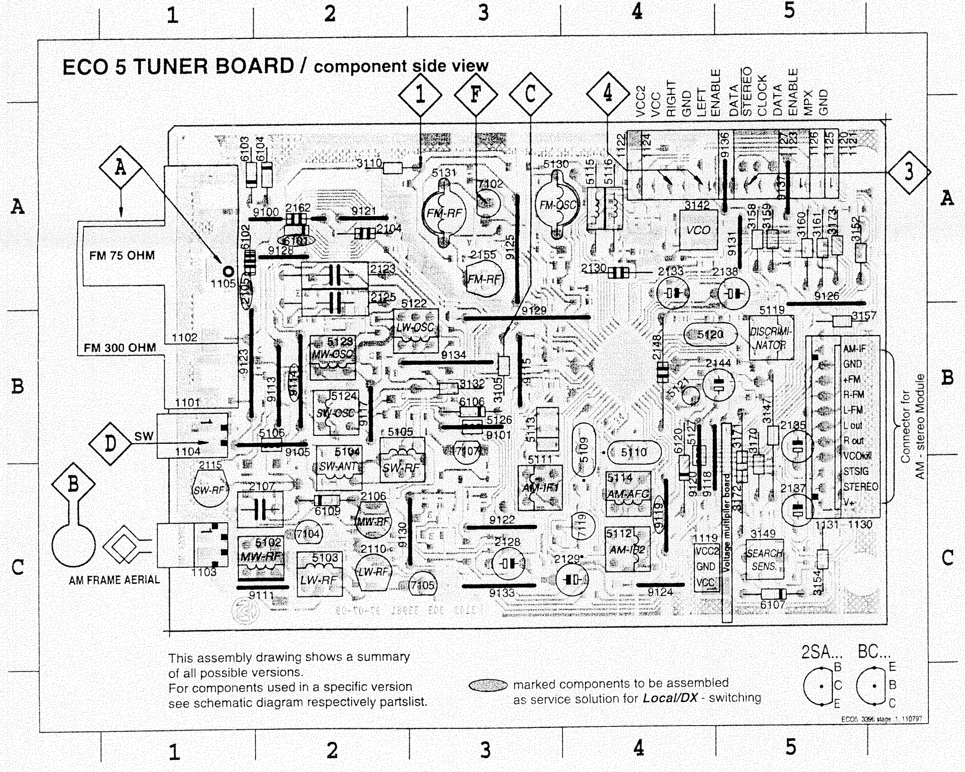
TUNER BOARD
ECO 5 systems


RADIO IC
TEA 5757T
FM frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
IF1
IF2
FM Det.
Stereo Decoder
CONTROL
programmable output ports
P1
P0
Reference Oscillator
AFC
AFC -
AFC +
Charge pump
Version
MW/LW
AM-RF,
AM-Osc.
buffer ampl.
RDS
(MPX)
LF filter
VCO
Discr.
75kHz
10,7 MHz
450kHz
FM-RF
FM-Osc.
AM-Osc.
AM-RF
AM-FRAME AERIAL
FM
1101
(1102)
1103
1124
1126
1121
Vcc
Vcc1
Vdd
Vcc2
V_Loop
V_StabA
V_StabB
right
left
stereo
clock
data
enable
A
B
C
1
2
3
4
5
3
43
39
37
35
33
18
10
11
9
15
14
24
27
28
29
31
30
25
2
5
6
8
38
34
23
7
22
40
41
36
44
32
19
20
ECO5 sys., 110297

1101	A1	2106	C2	2137	C5	3149	C5	3173	A5	5114	C4	5130	A3	7104	C2	9117	B2	9129	B3
1102	A1	2107	C2	2138	A5	3152	A5	5102	C2	5115	A4	5131	A3	7105	C3	9118	B4	9130	C3
1103	C1	2110	C2	2144	B5	3154	C5	5103	C2	5116	A4	6101	A2	7107	B3	9119	C4	9131	A5
1104	B1	2115	C1	2148	B4	3157	B5	5104	C2	5119	B5	6102	A1	7119	C4	9120	B4	9133	C3
1105	A1	2123	A2	2155	A3	3158	A5	5105	B2	5120	B4	6103	A1	9100	A2	9121	A2	9134	B3
1119	C5	2125	A2	2162	A2	3159	A5	5106	B2	5121	B4	6104	A2	9101	B3	9122	C3	9136	A5
1120	A5	2128	C3	3105	B3	3160	A5	5109	B4	5122	B3	6106	B3	9105	B2	9123	B1	9137	A5
1130	B5	2129	C4	3110	A2	3161	A5	5110	B4	5123	B2	6107	C5	9111	C2	9124	C4		
1131	B5	2130	A4	3132	B3	3170	C5	5111	C3	5124	B2	6109	C2	9113	B2	9125	A3		
2104	A2	2133	A4	3142	A4	3171	C5	5112	C4	5126	B3	6120	C4	9114	B2	9126	B5		
2105	A1	2135	B5	3147	B5	3172	C5	5113	B3	5127	B4	7102	A3	9115	B3	9128	A2		

ECO 5 TUNER BOARD / component side view


1
2
3
4
5
A
B
C
①
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Ⓒ
④
③
Ⓐ
Ⓓ
Ⓑ
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
SW-RF
MW-RF
LW-RF
AM-IF1
AM-IF2
AM-AFC
DISCRIMI-NATOR
SEARCH SENS.
Voltage multiplier board
AM-IF
GND
+FM
R-FM
L-FM
L out
R out
VCOkill
STSIG
STEREO
V+
Connector for AM - stereo Module
VCC2
GND
VCC
2SA...
BC...
B
C
E
E
B
C

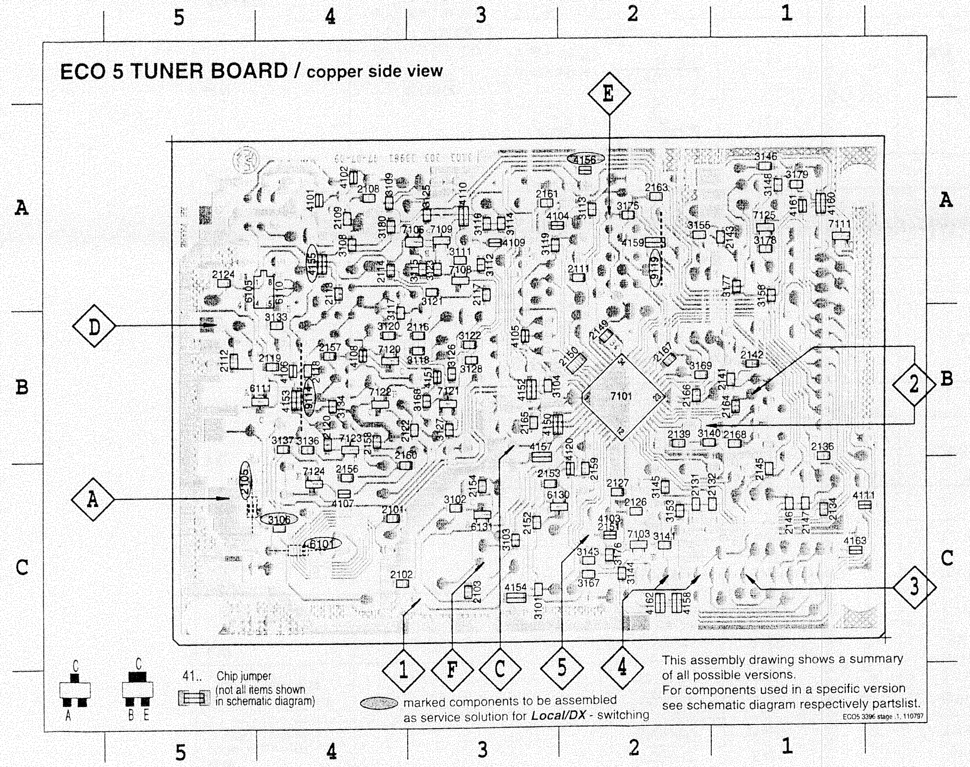
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

marked components to be assembled as service solution for *Local/DX* - switching

ECO5 3396 stage .1. 110797

2101	C4	2118	B4	2139	B2	2153	C3	2166	B2	3112	A3	3123	A3	3143	C2	3175	A2	4106	B4	4154	C3	6110	A4	7121	B3
2102	C4	2119	B4	2141	B1	2154	C3	2167	B2	3113	A2	3125	A3	3144	C2	3176	C2	4107	C4	4155	A4	6111	B4	7122	B4
2103	C3	2120	B4	2142	B1	2156	C4	2168	B1	3114	A3	3126	B3	3145	C2	3177	A1	4108	B4	4156	A2	6130	C2	7123	B4
2108	A4	2122	B3	2143	A1	2157	B4	3101	C3	3115	A3	3127	B3	3146	A1	3178	A1	4109	A3	4157	B3	6131	C3	7124	C4
2109	A4	2124	A5	2145	C1	2158	B4	3102	C3	3116	A3	3128	B3	3148	A1	3179	A1	4110	A3	4158	C2	7101	B2	7125	A1
2111	A2	2126	C2	2146	C1	2159	C2	3103	C3	3117	B4	3133	B4	3153	C2	3180	A4	4111	C1	4159	A2	7103	C2		
2112	B5	2127	C2	2147	C1	2160	C4	3104	B3	3118	B3	3134	B4	3155	A2	4101	A4	4120	C2	4160	A1	7106	A3		
2113	A4	2131	C2	2149	B2	2161	A3	3106	C4	3119	A3	3136	B4	3156	A1	4102	A4	4150	B2	4161	A1	7108	A3		
2114	A4	2132	C1	2150	B2	2163	A2	3108	A4	3120	B4	3137	B4	3167	C2	4103	C2	4151	B3	4162	C1	7109	A3		
2116	B3	2134	C1	2151	C2	2164	B1	3109	A4	3121	A3	3140	B2	3168	B3	4104	A2	4152	B3	4163	C1	7111	A1		
2117	A3	2136	B1	2152	C3	2165	B3	3111	A3	3122	B3	3141	C2	3169	B2	4105	B3	4153	B4	6105	A4	7120	B4		

ECO 5 TUNER BOARD / copper side view


5
4
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C
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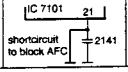
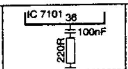
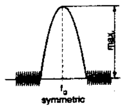
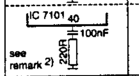
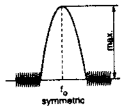
Ⓐ
②
③
①
Ⓕ
Ⓒ
⑤
④
7101
A
B E
41..
Chip jumper
(not all items shown in schematic diagram)

marked components to be assembled as service solution for *Local/DX* - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ECO5 3396 stage .1. 110797

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV		5111	4	
			 see remark [2]	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	 Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	4	
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO5. decr. coll. 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

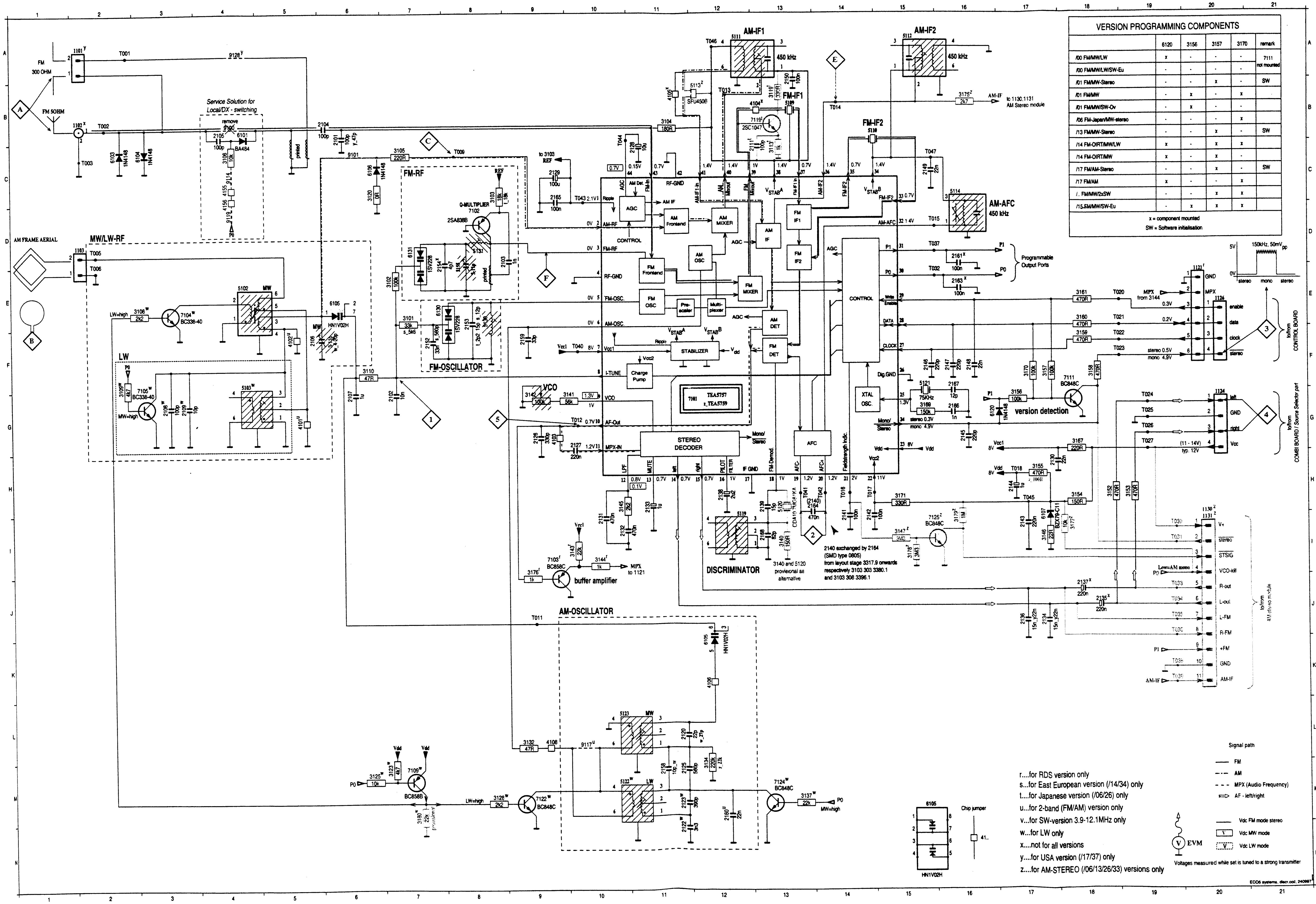
[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

↕ Repeat

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50OHM
AM FRAME AERIAL
Service Solution for Local/DX - switching
MW/LW-RF
LW
FM-RF
Q-MULTIPLIER 7102
FM-OSCILLATOR
VCO
AM-IF1
AM-IF2
FM-IF1
FM-IF2
AM-AFC 450 kHz
450 kHz
AGC
AM Frontend
AM MIXER
AM IF
AM OSC
FM Frontend
FM OSC
Pre-scaler
Multi-plexer
FM MIXER
AM DET
FM DET
FM IF1
FM IF2
STABILIZER
Charge Pump
7101 TEA5757 z_TEA5759
STEREO DECODER
AFC
CONTROL
XTAL OSC.
Programmable Output Ports
version detection
buffer amplifier
DISCRIMINATOR
AM-OSCILLATOR
to/from CONTROL BOARD
to/from COMBI BOARD / Source Selector part
to/from AM stereo module
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
3140 and 5120 provisional as alternative
150kHz, 50mVpp
stereo mono stereo
Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right
Vdc FM mode stereo
Vdc MW mode
Vdc LW mode
EVM
Voltages measured while set is tuned to a strong transmitter
HN1V02H
Chip jumper
ECO5 systems, discr.coll. 240997

VERSION PROGRAMMING COMPONENTS	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3106	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20224	220k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	

ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

3176	4822 051 10102	1k 2% 0,25W	for RDS version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

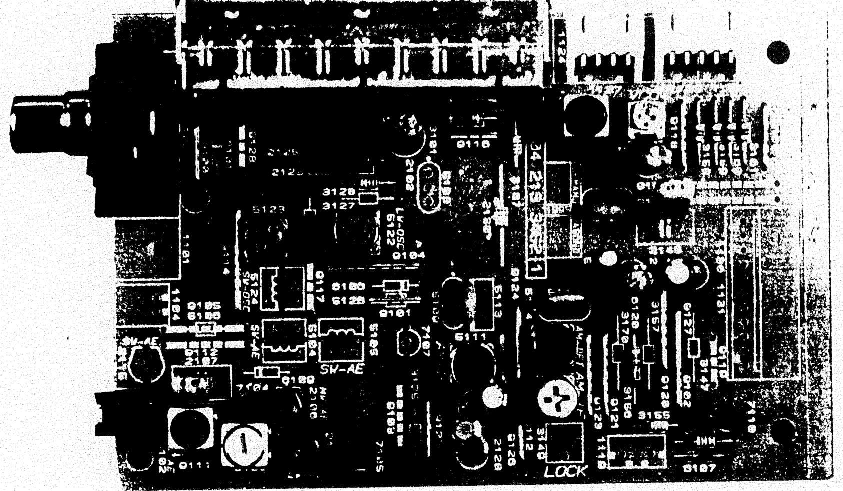
DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

Note: Only the parts mentioned in this list are normal service spare parts.



TUNER 95 BOARD

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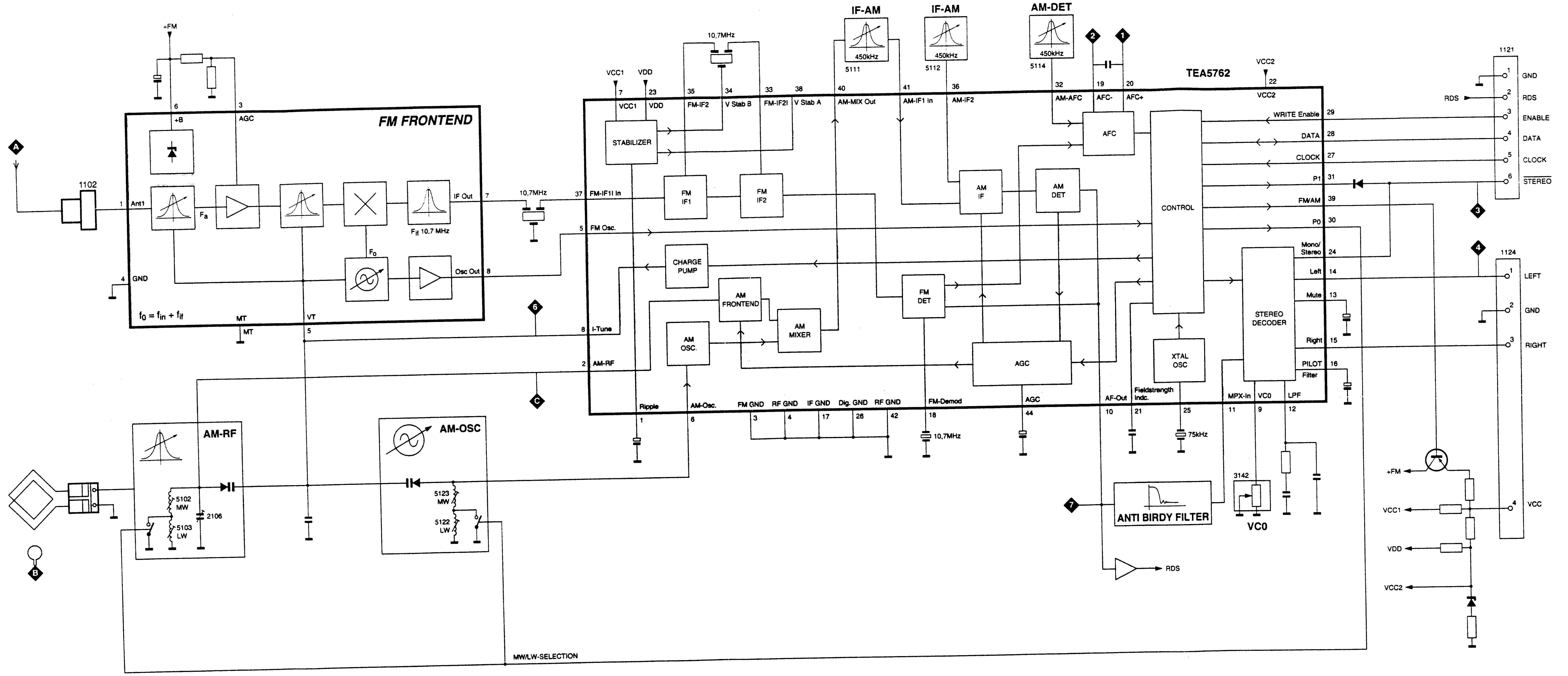
Blockdiagram 7D-1
Adjustmant table 7D-2
Component layout..7D-2
Circuit diagram..7D-3
Partslist 7D-4

BLOCKDIAGRAM

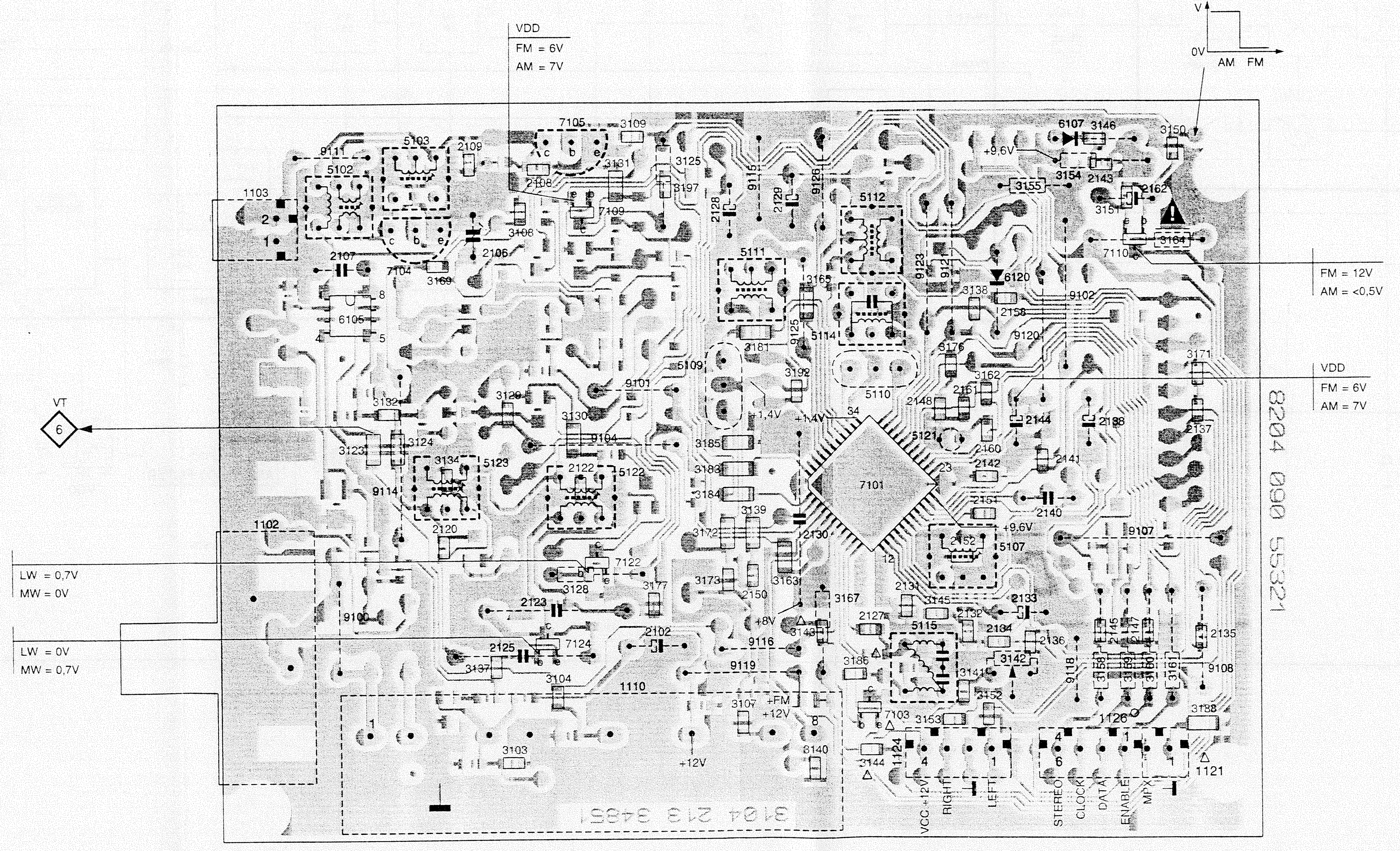

+FM
FM FRONTEND
+B
AGC
1102
Ant1
GND
Fa
Fo
Fif 10,7 MHz
IF Out
Osc Out
f0 = fin + fif
MT
VT
10,7MHz
TEA5762
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
FM IF1
FM IF2
FM-IF1I In
FM Osc.
CHARGE PUMP
I-Tune
AM-RF
AM FRONTEND
AM MIXER
AM OSC.
AM IF
AM DET
FM DET
AGC
AFC
CONTROL
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/ Stereo
Left
Mute
Right
PILOT Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
IF-AM
450kHz
5111
IF-AM
450kHz
5112
AM-DET
450kHz
5114
1121
GND
RDS
ENABLE
DATA
CLOCK
STEREO
1124
LEFT
GND
RIGHT
VCC
AM-RF
5102 MW
5103 LW
2106
AM-OSC
5123 MW
5122 LW
ANTI BIRDY FILTER
3142
VCO
75kHz
10,7MHz
RDS
+FM
VCC1
VDD
VCC2
MW/LW-SELECTION
A
B
C
1
2
3
4
6
7

1102	F4	2107	C4	2128	C7	2136	G10	2145	G11	2161	E9	3124	E5	3137	G5
1103	C3	2108	C6	2129	C8	2137	E11	2147	G11	2162	C11	3125	C7	3138	D9
1110	G7	2109	C5	2130	F8	2138	E10	2148	E9	3103	H6	3128	F6	3139	F8
1121	H11	2120	F5	2131	F9	2140	F10	2150	F8	3104	G6	3129	E6	3140	H8
1124	H9	2122	E6	2132	F9	2141	E10	2151	F9	3107	G7	3130	E6	3141	G9
1126	G10	2123	F6	2133	F10	2142	E9	2152	F9	3108	C6	3131	C6	3142	G10
2102	G7	2125	G5	2134	G10	2143	C10	2158	D10	3109	B7	3132	E5	3143	G8
2106	C5	2127	F9	2135	G11	2144	E10	2160	E9	3123	E4	3134	E5	3144	H8

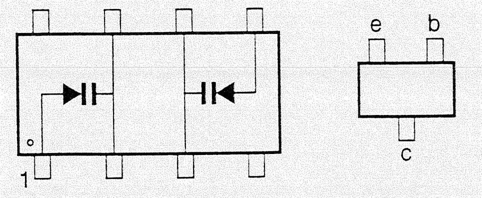
3145	F9	3158	G11	3167	F8	3183	E7	5103	C5	5121	E9	7104	D5	9102	D10
3146	B10	3159	G11	3169	D5	3184	E7	5107	F10	5122	E7	7105	B6	9104	E6
3150	C11	3160	G11	3171	D11	3185	E7	5109	D7	5123	E5	7109	C6	9107	F11
3151	C10	3161	G11	3172	F7	3186	G8	5110	E9	6105	D4	7110	D11	9108	G11
3152	G9	3162	D9	3173	F7	3188	G11	5111	C8	6107	B10	7122	F7	9111	C4
3153	G9	3163	F8	3176	D9	3192	D8	5112	C9	6120	D10	7124	G6	9114	E5
3154	C10	3164	C11	3177	F7	3197	C7	5114	D8	7101	E9	9100	F4	9115	C8
3155	C10	3165	D8	3181	D8	5102	C4	5115	G9	7103	G9	9101	E7	9116	G8

9118	G10
9119	G7
9120	D10
9121	D9
9123	D9
9125	D8
9126	C8

TUNER 95 bis Combi: Copper side view


VDD
FM = 6V
AM = 7V
V
0V
AM FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
+9,6V
+9,6V
+8V
+FM
+12V
+12V
VCC +12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MIX
8204 090 55321
7101
1103
1102
1110
1121
1124
1126

IC 6105



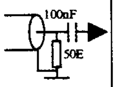
△ only in RDS version (04121)

○ not in RDS version (04341)

TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

LEU0149
9751

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50) 87.5 - 108 MHz			108 MHz	check	6	7 ... 9V
			87.5 MHz	check		1.3 ... 2V
MW (9) 531 - 1602 kHz			1602 kHz	5123		8.3V ± 0.2V
			531 kHz	check		1V ± 0.4V
LW (3) 153 - 279 kHz			279 kHz	5122		8.3V ± 0.2V
			153 kHz	check		1V ± 0.4V
FM - DETECTION						
FM	98 MHz 1mV continuous wave ***short pin 21 (IC7101) to ground***	A	98 MHz	5107	1 2	0mV ± 3mV
FM - VCO						
FM	98 MHz 1 mV continuous wave	A	98 MHz	3142	3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	A	98MHz	mixcoil inside Tuner 1110	4	Distortion minimum
AM - IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	 C	MW	5111	7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave			5114	1 2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	B *	558kHz	5102	7	MAX ↕
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM		198kHz	5103		MAX

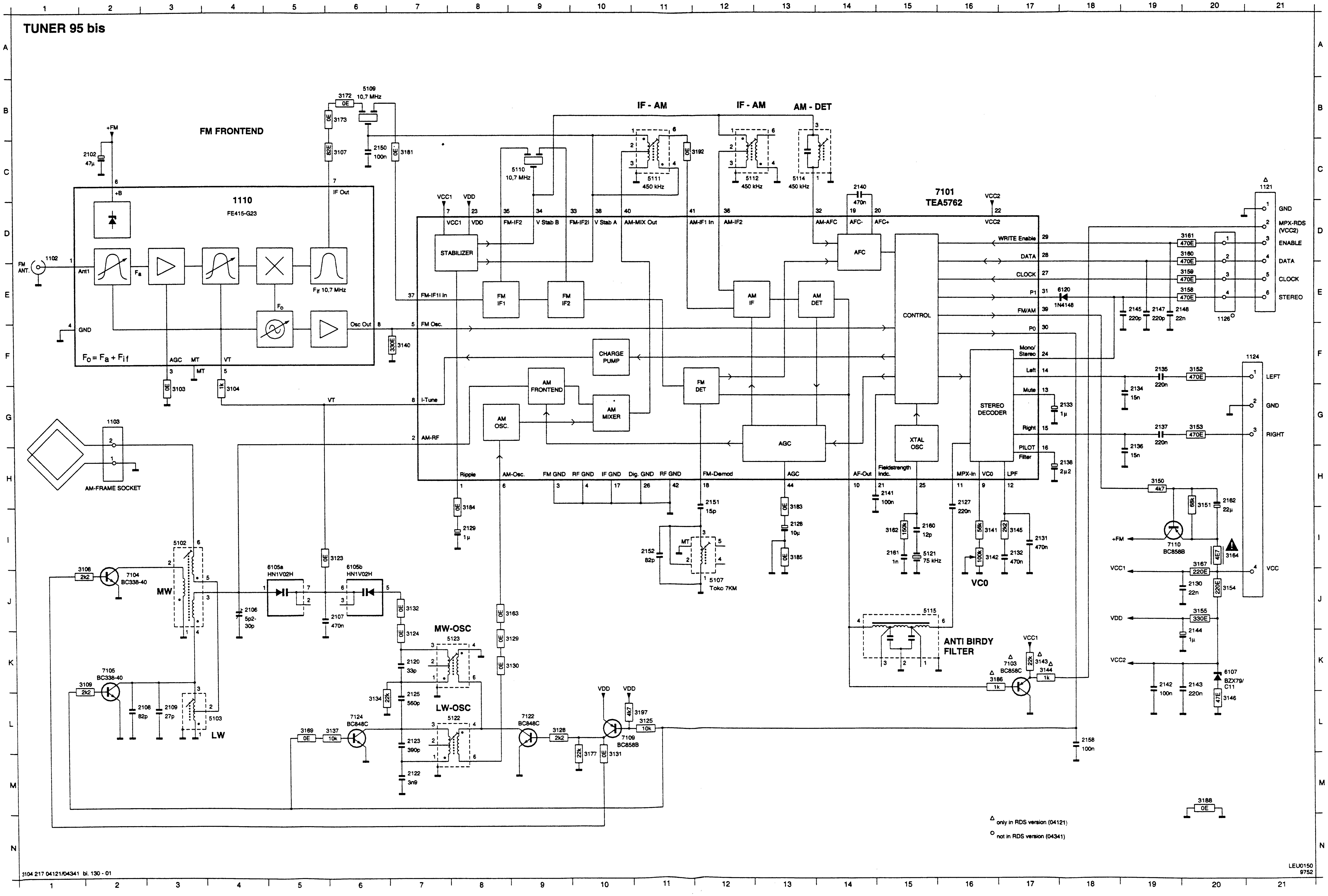
adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

1102	D1
1103	G2
1110	D4
1121	C21
1124	F21
1126	E20
2102	C2
2106	J4
2107	J6
2108	L2
2109	L3
2120	K7
2122	M7
2123	L7
2125	L7
2127	H16
2128	I13
2129	I8
2130	J20
2131	I17
2132	I17
2133	G18
2134	G19
2135	F19
2136	H19
2137	G19
2138	H18
2140	C14
2141	H15
2142	K19
2143	K20
2144	K20
2145	E19
2147	E19
2148	E19
2150	C6
2151	H12
2152	I11
2158	L18
2160	I15
2161	I15
2162	H20
3103	G3
3104	G4
3107	C6
3108	J1
3109	K1
3123	I6
3124	K7
3125	L11
3128	L9
3129	K8
3130	K8
3131	M10
3132	J7
3134	L6
3137	L5
3140	F7
3141	I16
3142	I16
3143	K17
3144	K17
3145	I17
3146	L20
3150	H19
3151	I20
3152	F20
3153	G20
3154	J20
3155	J20
3158	E19
3159	E19
3160	D19
3161	D19
3162	I15
3163	J8
3164	I20
3167	I20
3169	L5
3172	B6
3173	B6
3177	M10
3181	C7
3183	I13
3184	I8
3185	I13
3186	K16
3188	M20
3192	C12
3197	L11
5102	I3
5103	L4
5107	J12
5109	B6
5110	C9
5111	C11
5112	C12
5114	C13
5115	J15
5121	I15
5122	L7
5123	K7
6105a	I5
6105b	I6
6107	K20
6120	E17
7101	C15
7103	K17
7104	J2
7105	K2
7109	L10
7110	I19
7122	L9
7124	L6

TUNER 95 bis


FM FRONTEND
IF - AM
IF - AM
AM - DET
1110
FE415-G23
+FM
2102 47µ
FM ANT.
1102
Ant1
Fa
Fif 10,7 MHz
Fo
Osc Out
IF Out
GND
Fo = Fa + Fif
AGC
MT
VT
3103 0E
3104 1k
3140 330E
5109 10,7 MHz
3172 0E
3173 0E
3107 82E
2150 100n
3181 0E
5110 10,7 MHz
5111 450 kHz
5112 450 kHz
5114 450 kHz
3192 0E
2140 470n
7101
TEA5762
VCC1
VDD
VCC2
STABILIZER
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
FM-IF1I In
FM Osc.
I-Tune
AM-RF
FM IF1
FM IF2
AM IF
AM DET
AFC
CONTROL
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT
Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
6120 1N4148
2145 220p
2147 220p
2148 22n
3161 470E
3160 470E
3159 470E
3158 470E
1126
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
1124
LEFT
GND
RIGHT
VCC
2135 220n
3152 470E
2134 15n
2133 1µ
2137 220n
3153 470E
2136 15n
2138 2µ2
3150 4k7
3151 68k
2162 22µ
7110 BC858B
3164 4E7
+FM
VCC1
3167 220E
2130 22n
3154 220E
VDD
3155 330E
2144 1µ
VCC2
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
3184 0E
2129 1µ
2151 15p
2152 82p
MT
5107 Toko 7KM
3183 0E
2128 10µ
3185 0E
2141 100n
3162 150k
2160 12p
2161 1n
5121 75 kHz
2127 220n
3141 56k
3142 100k
3145 2k2
2132 470n
2131 470n
VCO
5115
ANTI BIRDY FILTER
VCC1
7103 BC858C
3143 22k
3144 1k
3186 1k
2158 100n
1103
AM-FRAME SOCKET
5102
MW
3108 2k2
7104 BC338-40
7105 BC338-40
3109 2k2
2108 82p
2109 27p
5103
LW
6105a HN1V02H
6105b HN1V02H
2106 5p2-30p
3123 0E
2107 470n
3132 0E
3124 0E
MW-OSC
5123
2120 33p
2125 560p
3134 22k
LW-OSC
5122
2123 390p
2122 3n9
7124 BC848C
3169 0E
3137 10k
3163 0E
3129 0E
3130 0E
7122 BC848C
3128 2k2
3177 22k
VDD
VDD
3197 4k7
3125 10k
7109 BC858B
3131 0E
3188 0E
LEU0150
9752

Δ only in RDS version (04121)

○ not in RDS version (04341)

3104 217 04121/04341 bl. 130 - 01

ELECTRICAL PARTS LIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 63V
2125	4822 121 10578	560P 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	50V 15pF 5%
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3123	4822 051 10008	0R 5% 0,25W
3124	4822 051 10008	0R 5% 0,25W
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R 5% 0,25W
3131	4822 051 10008	0R 5% 0,25W
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R 5% 0,25W
3140	4822 051 20331	330R 5% 0,1W
3141	4822 051 20563	56k 5% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 051 20224	220k 5% 0,1W
3163	4822 051 10008	0R 5% 0,25W
3164	4822 052 10478 △	4R7 5% 0,33W
3165	4822 051 10008	0R 5% 0,25W
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R 5% 0,25W
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3181	4822 051 10008	0R 5% 0,25W
3183	4822 051 10008	0R 5% 0,25W
3184	4822 051 10008	0R 5% 0,25W
3185	4822 051 10008	0R 5% 0,25W
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R 5% 0,25W
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW AERIAL
5103	4822 157 71635	LW AERIAL
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM-IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHz
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6107	4822 130 34488	BZX79-B11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note: Only the parts mentioned in this list are normal service spare parts.

KARAOKE BOARD

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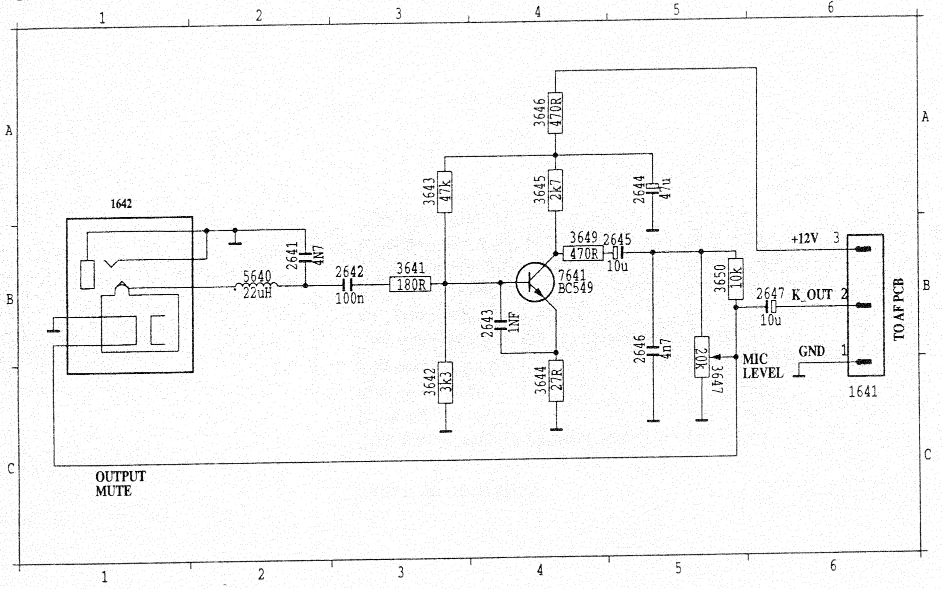
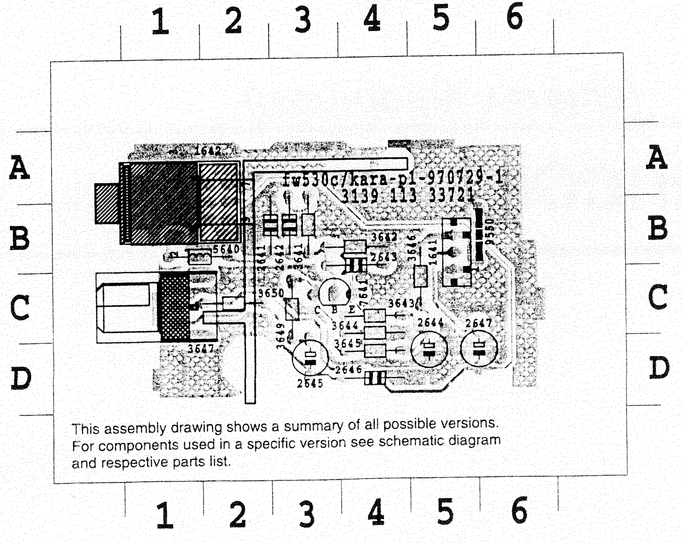
Circuit Diagram .... 8 - 2
Partlist .... 8 - 3

KARAOKE CIRCUIT & LAYOUT

1641 B 6
1642 A 1
2641 B 2
2642 B 3
2643 B 4
2644 A 5
2645 B 5
2646 B 5
2647 B 6
3641 B 3
3642 C 3
3643 A 3
3644 C 4
3645 A 4
3646 A 4
3647 C 5
3649 B 4
3650 B 5
5640 B 2
7641 B 4


1
2
3
4
5
6
A
B
C
1642
2641
4N7
5640
22uH
2642
100n
3641
180R
3643
47k
3646
470R
3645
2k7
2644
47u
3649
470R
2645
10u
7641
BC549
2643
1NF
3642
3k3
3644
27R
2646
4n7
3650
10k
20K
3647
MIC
LEVEL
2647
10u
K_OUT
+12V
GND
TO AF PCB
1641
OUTPUT
MUTE

1641 B 5
1642 B 1
2641 B 2
2642 B 3
2643 B 4
2644 D 5
2645 D 3
2646 D 4
2647 D 6
3641 B 3
3642 B 3
3643 C 4
3644 D 4
3645 D 4
3646 C 4
3647 C 1
3649 C 2
5640 B 1
7641 C 3
9550 B 6


1
2
3
4
5
6
A
B
C
D
fw530c/kara-p1-970729-1
3139 113 33721
1642
5640
3647
3650
3649
2645
2641
2642
3641
3642
2643
3646
1641
9550
7641
3643
3644
3645
2644
2646
2647

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram
and respective parts list.

ELECTRICAL PARTS LIST - KARAOKE BOARD

MISCELLANEOUS

1642	4822 267 40898	Mic. Socket

CAPACITORS

2641	4822 126 11714	4,7nF 20%
2642	4822 126 12882	100nF +80/-20% 50V
2643	4822 122 33197	1nF 10% 50V
2644	4822 124 41751	47µF 20% 50V
2645	4822 124 41579	10µF 20% 50V
2646	4822 126 11714	4,7nF 20%
2647	4822 124 41579	10µF 20% 50V

RESISTORS

3641	4822 116 52213	180R 5% 0,5W
3642	4822 116 52269	3k3 5% 0,5W
3643	4822 116 83884	47k 5% 0,5W
3644	4822 116 52188	27R 5% 0,5W
3645	4822 116 52263	2k7 5% 0,5W
3646	4822 116 83883	470R 5% 0,5W
3647	4822 101 21204	20KA
3649	4822 116 83883	470R 5% 0,5W

COIL

5640	4822 157 52983	22µH 10%

TRANSISTOR

7641	4822 130 41096	BC550C

Note: Only the parts mentioned in this list are normal service parts.

ETF6 TAPE MODULE

(Non-dolby Version)

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Brief Introduction 9-3
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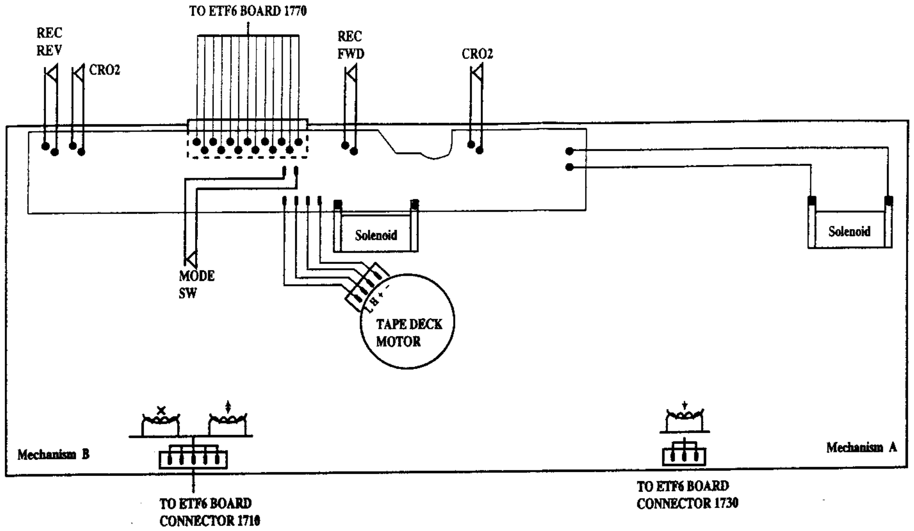
ETF6 Non-dolby board layouts.................................. 9-6
Analog Circuit diagram 9-7
Servo Circuit diagram 9-8
Exploded views & parts list.. 9-9
Electrical parts list.. 9-12

Tapedeck wiring (Double deck)



TO ETF6 BOARD 1770
REC REV
CRO2
REC FWD
CRO2
Solenoid
Solenoid
MODE SW
TAPE DECK MOTOR
Mechanism B
Mechanism A
TO ETF6 BOARD CONNECTOR 1710
TO ETF6 BOARD CONNECTOR 1730

OPTIONS / VARIANTS TABLE

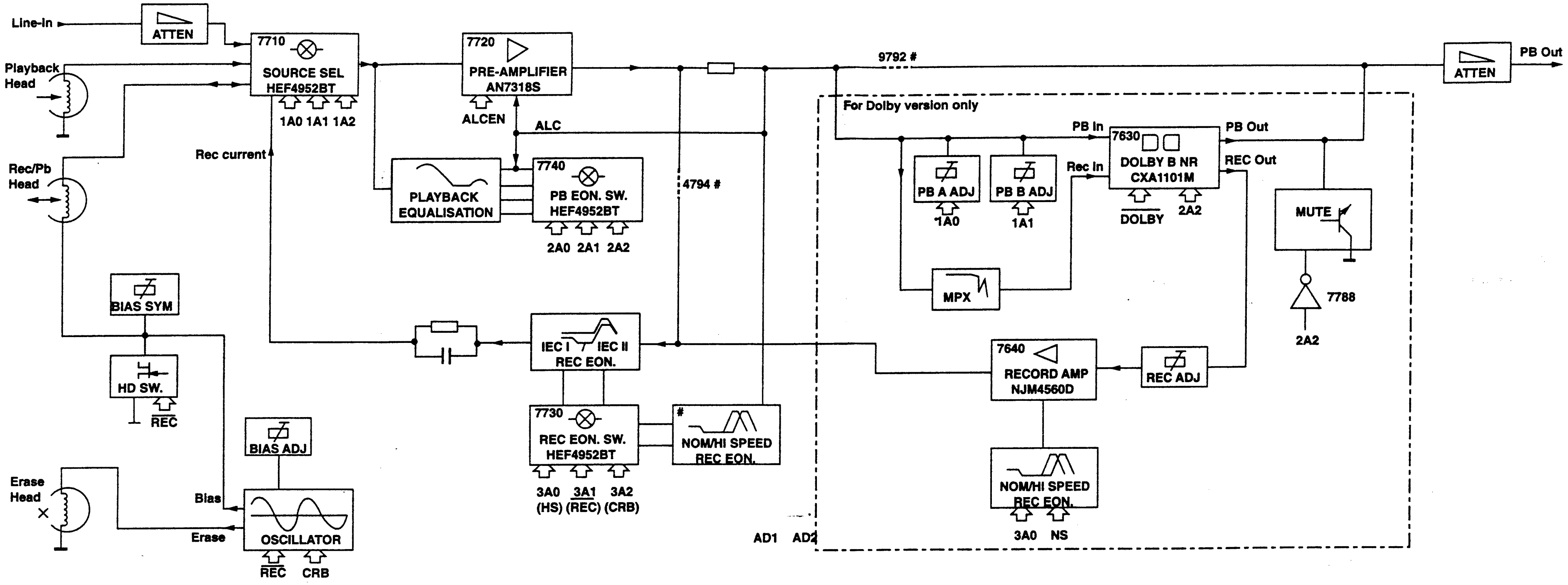
MODULE	ETF6	
VARIANT	1	2
NAME	ND/DD/FR	ND/DD/FF
Deck configuration	double	double
Autoreverse	yes (B)	no
Auto-replay	no	yes (B)
Motor configuration	single	single
Auto tape type selection	yes	yes
Dolby B type Noise Reduction	no	no
19 kHz pilot suppression	no	no
High speed dubbing	yes	yes

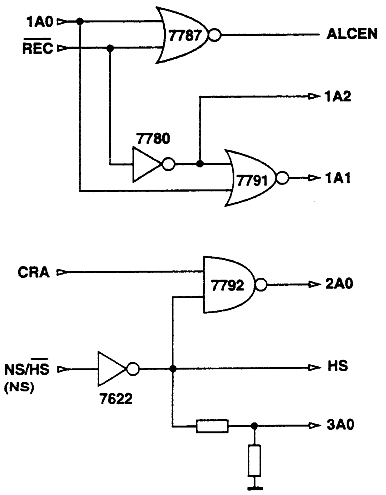
DB = Dolby B NR
DD = Double Deck
FF = Non-Autoreverse
FR = Autoreverse Deck B
ND = Non-Dolby
SD = Single Deck

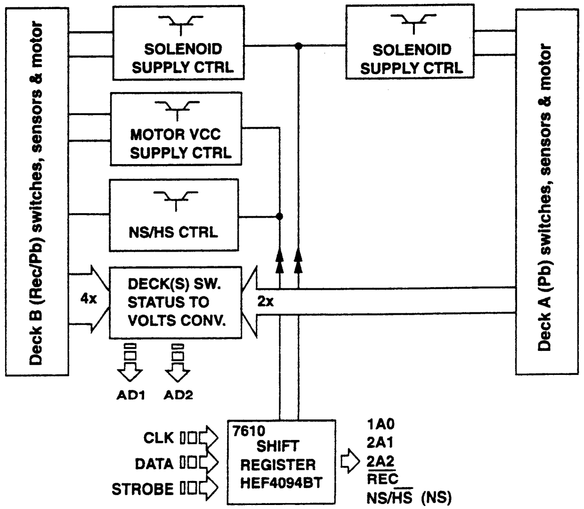
Variations table for Analog Circuit

	Autoreverse	Non-autoreverse
	ND/DD/FR	ND/DD/FF
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3772	4k7	5k6
3774	10k	8k2

BLOCK DIAGRAM


Line-In
ATTEN
Playback Head
Rec/Pb Head
Erase Head
7710
SOURCE SEL
HEF4952BT
1A0 1A1 1A2
7720
PRE-AMPLIFIER
AN7318S
ALCEN
ALC
Rec current
PLAYBACK EQUALISATION
7740
PB EON. SW.
HEF4952BT
2A0 2A1 2A2
4794 #
9792 #
BIAS SYM
HD SW.
REC
BIAS ADJ
Bias
Erase
OSCILLATOR
REC CRB
IEC I IEC II
REC EON.
7730
REC EON. SW.
HEF4952BT
3A0 3A1 3A2
(HS) (REC) (CRB)
#
NOM/HI SPEED
REC EON.
AD1 AD2
For Dolby version only
PB In
7630
DOLBY B NR
CXA1101M
PB Out
REC Out
Rec In
PB A ADJ
PB B ADJ
1A0
1A1
DOLBY
2A2
MPX
MUTE
7788
2A2
7640
RECORD AMP
NJM4560D
REC ADJ
NOM/HI SPEED
REC EON.
3A0 NS
ATTEN
PB Out


1A0
REC
7787
ALCEN
1A2
7780
7791
1A1
CRA
7792
2A0
NS/HS
(NS)
7622
HS
3A0


Deck B (Rec/Pb) switches, sensors & motor
SOLENOID SUPPLY CTRL
MOTOR VCC SUPPLY CTRL
NS/HS CTRL
DECK(S) SW. STATUS TO VOLTS CONV.
4x
2x
AD1 AD2
SOLENOID SUPPLY CTRL
Deck A (Pb) switches, sensors & motor
CLK
DATA
STROBE
7610
SHIFT REGISTER
HEF4094BT
1A0
2A1
2A2
REC
NS/HS (NS)

NOTE: # For Non-dolby version only
Only 1 channel is presented.

▯▯⇨ MicroProcessor Control / Communication lines

⇨ Direct / Indirect Control lines from Shift Registers

Brief introduction

General

1. Playback Mode
Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952B). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952B) and then output to the AF Board through pins 5 and 6 of the connector 1701.

2. Recording Mode
Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952B) and then back to IC7710 (HEF4952B) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then equalised for playback mode by the amplifier IC7720 (AN7318S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
The Mode Selector IC7710 (HEF4952B) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
ALC circuit consists of resistors (3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby only)
Switch S4 of the IC7740 (HEF4952B) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952B)
The function of the IC7740 (HEF4952B) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952B)
The function of the IC7730 (HEF4952B) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby only)
Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
Playback Switch which consists of the FETs 7785 (For Dolby only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed
During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952B) via 1A0, 2A1 and 2A2. IC7610(HEF4094BT) also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is also controlled by IC7610(HEF4094BT) via NS/HS.

Dolby Circuit (For sets with Dolby B NR only)

15. IC7630 (CXA1101M)
IC7630 (CXA1101M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.

16. 19kHz Filter
The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non Auto Reverse
FR	Auto Reverse on Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701

INTERCONNECTION TO AF5 BOARD

○	1	REC-R	Record input right
○	2	REC-L	Record input left
○	3	GND A	AF Ground
○	4	+12V	D.C. supply (+12V) in
○	5	TAPE-R	Playback output right
○	6	TAPE-L	Playback output left
○	7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703

INTERCONNECTION TO AF5 BOARD

○	1	GND M	Motor Ground
○	2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706

INTERCONNECTION TO FRONT BOARD

○	1	AD2	Deck sensing switches output voltage / Deck A EOT
○	2	AD1	Deck sensing switches output voltage / Deck B EOT
○	3	+5	DC supply +5V for ADC network
○	4	GND P	Control & Oscillator Ground
○	5	CLK	HEF4094BT shift register Clock line
○	6	DATA	HEF4094BT shift register Data line
○	7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710

DECK B HEADS CONNECTON *(For ETF6 only)*

○	1	B R/P HD L+	R/P Head left channel positive
○	2	B R/P HD R-	R/P Head right channel positive
○	3	CMN	R/P Head return ground
○	4	ERASE HEAD	Erase Head
○	5	GND A	Erase Head ground

CONNECTOR 1720

DECK B HEADS CONNECTON *(For ETF5 only)*

○	1	B R/P HD L+	R/P Head left channel positive
○	2	B R/P HD L-	R/P Head left channel negative
○	3	B R/P HD R+	R/P Head right channel positive
○	4	B R/P HD R-	R/P Head right channel negative
○	5	ERASE HEAD	Erase Head
○	6	GND A	Erase Head ground

CONNECTOR 1730

DECK A HEAD CONNECTIONS *(For Double Deck versions only)*

○	1	A PB HD R+	Pb Head right channel positive
○	2	GND A	Pb Head return ground shield
○	3	A PB HD L+	Pb Head left channel positive

CONNECTOR 1740

DECK B CONTROL INTERFACE *(For ETF5 Double Deck only)*

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply	
○	6	Vcc	Deck / Motor supply	
○	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	
○	9	H	H pin for motor	
○	10	L	L pin for motor	

CONNECTOR 1750

DECK A CONTROL INTERFAC *(For ETF5 Double Deck only)*

○	1	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	2	PHOTO A	Photo sensor output (tape movement indication)	
○	3	SOL A	Solenoid supply	
○	4	Vcc	Deck/Motor supply	
○	5	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	6	GND M	Deck/Motor ground	

CONNECTOR 1760

DECK B CONTROL INTERFACE *(For ETF5 Single Deck only)*

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply	
○	6	Vcc	Deck / Motor supply	
○	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	

CONNECTOR 1770

DECK B CONTROL INTERFACE *(For ETF6 only)*

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply for deck B	
○	6	Vcc	Deck / Motor supply	
○	7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	
○	9	L	L pin for motor	
○	10	H	H pin for motor	
○	11	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○	12	SOL A	Solenoid supply for deck A	
○	13	PHOTO A	Photo sensor output (tape movement indication)	

TAPE MECHANISM ELECTRONICS

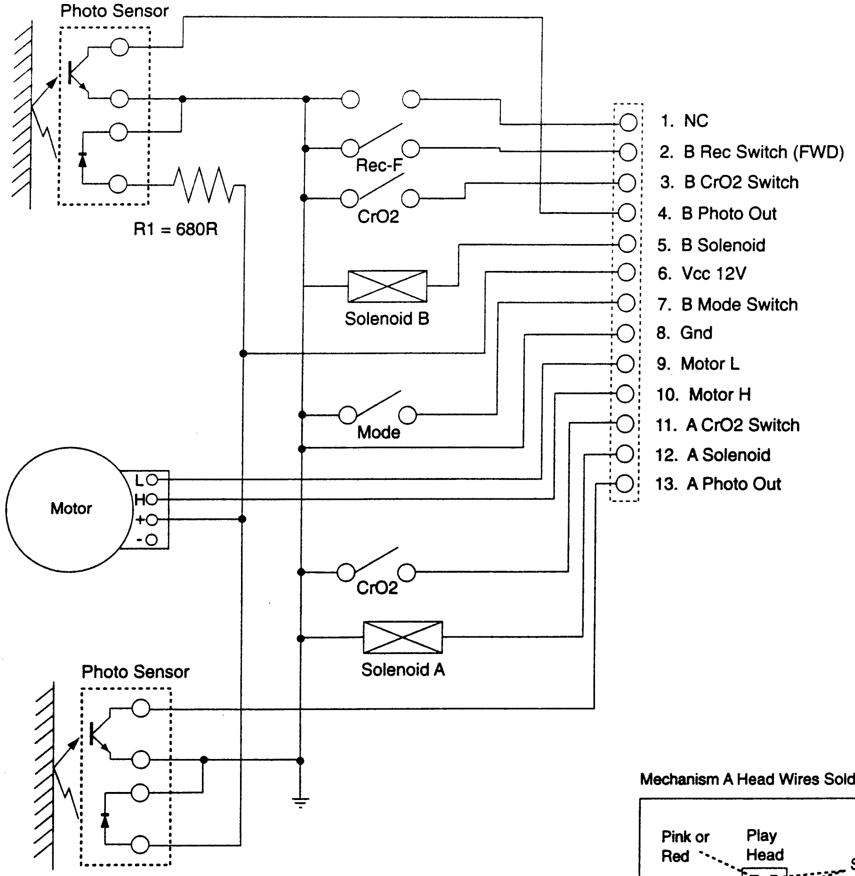
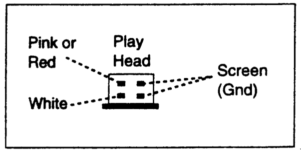
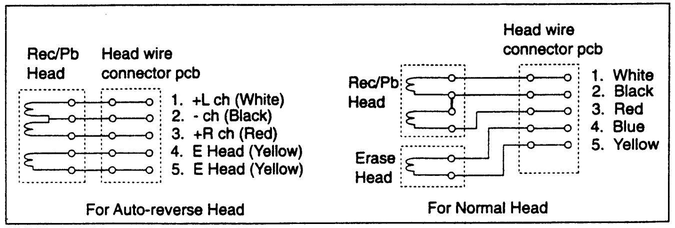


Photo Sensor
R1 = 680R
Rec-F
CrO2
Solenoid B
Mode
Motor
L
H
+
-
CrO2
Solenoid A
Photo Sensor
1. NC
2. B Rec Switch (FWD)
3. B CrO2 Switch
4. B Photo Out
5. B Solenoid
6. Vcc 12V
7. B Mode Switch
8. Gnd
9. Motor L
10. Motor H
11. A CrO2 Switch
12. A Solenoid
13. A Photo Out

Mechanism A Head Wires Soldering


Pink or
Red
Play
Head
White
Screen
(Gnd)

Mechanism B Head Wires Soldering


Rec/Pb
Head
Head wire
connector pcb
1. +L ch (White)
2. - ch (Black)
3. +R ch (Red)
4. E Head (Yellow)
5. E Head (Yellow)
For Auto-reverse Head
Rec/Pb
Head
Erase
Head
Head wire
connector pcb
1. White
2. Black
3. Red
4. Blue
5. Yellow
For Normal Head

General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	◇1 or ◇2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	◇1 or ◇2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	◇1 or ◇2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	◇7 or ◇8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only
# For Auto-reverse version only

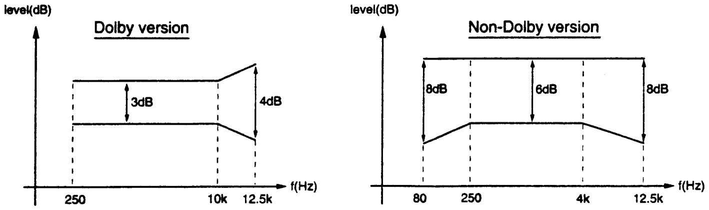


figure. 1

General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	1 or 2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	7 or 8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	1 or 2 LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only
# For Auto-reverse version only

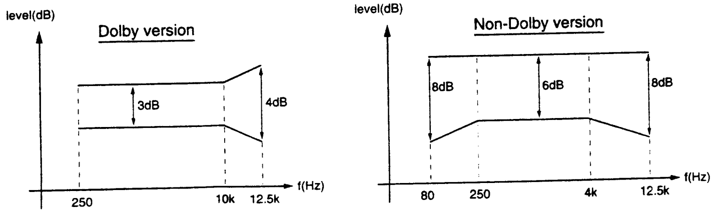


figure. 1

Recording

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
PRE-ADJUST BIAS AND BIAS-SYMMETRY						
DECK B	CrO_2	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
					3785 *	left = right
	FERRO				check only	750mV ± 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check only	limits see fig.2
Inject 1kHz 8.85mV via 3 or 4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check only	≤3%
Remark: If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high increase bias and re-measure.						
ADJUST DOLBY RECORD LEVEL *						
Inject 400Hz 8.85mV via 3 or 4	CrO_2	RECORD	9 or 10 LEFT RIGHT	mV-meter	3655 & 3556	420mV
	RECORDED CASSETTE	PLAY	7 or 8 LEFT RIGHT	mV-meter	check	170mV ± 1dB
Remark: If measured value is out, re-adjust record level up or down slightly to attain play level.						

* For Dolby version only

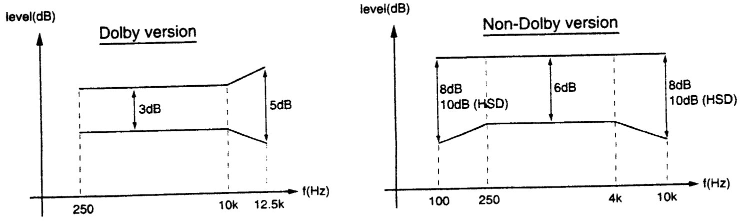
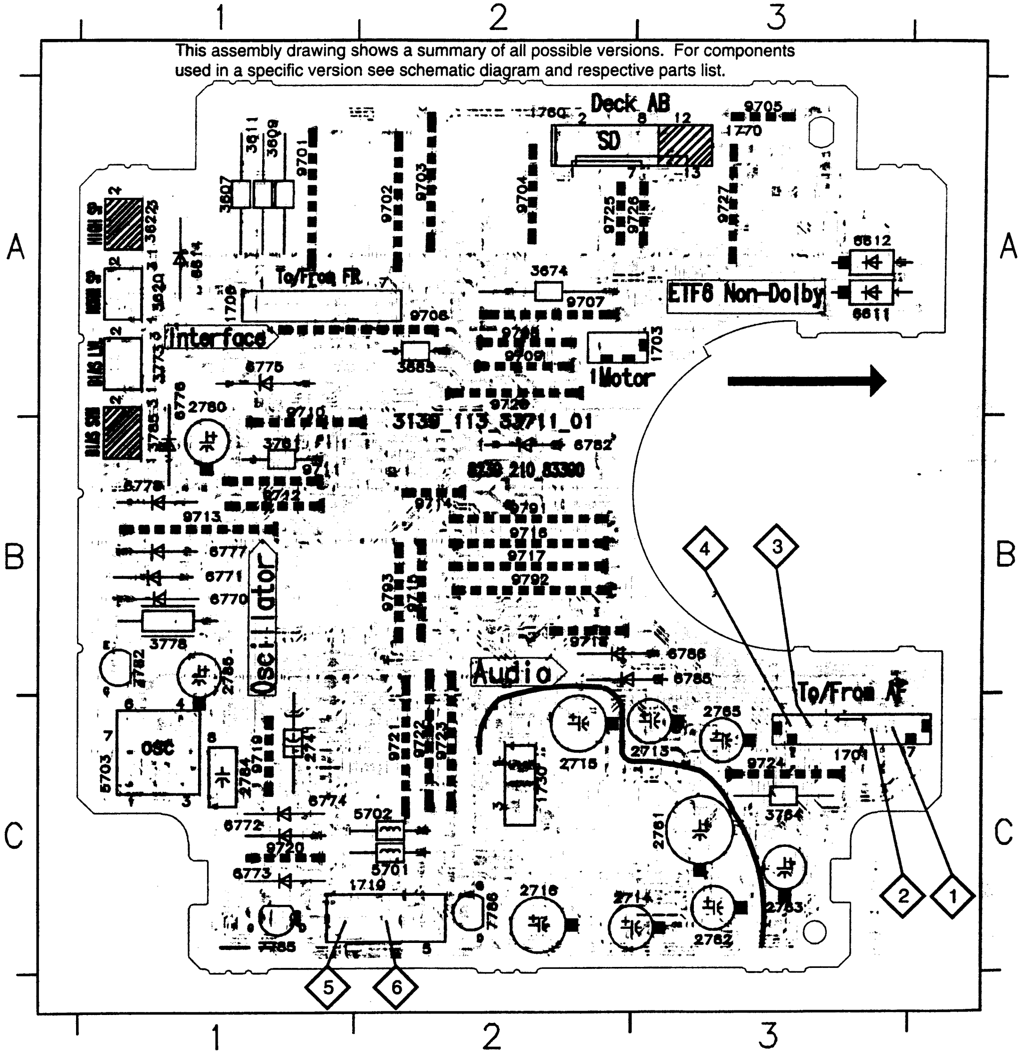


figure. 2

COMPONENT LAYOUT

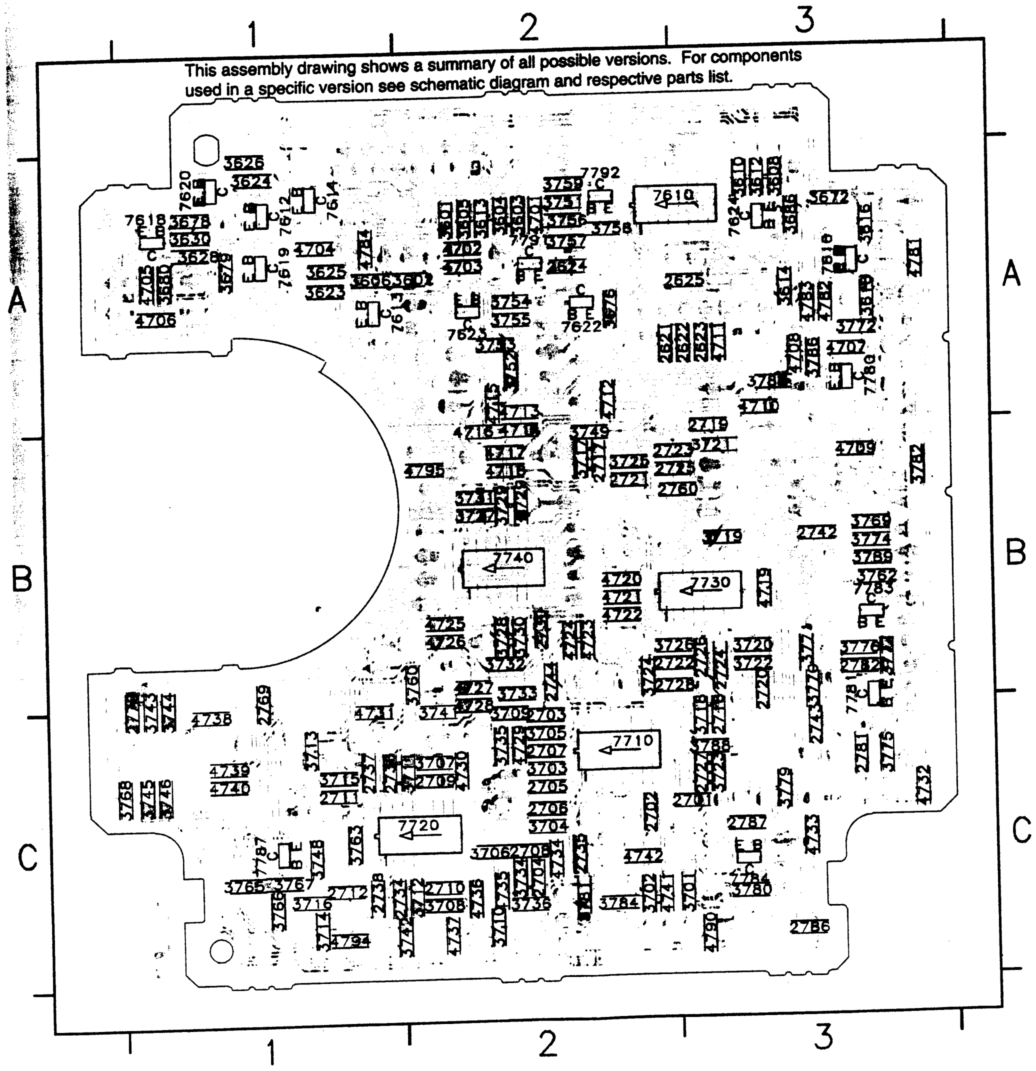


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
A
B
C
Deck AB
SD
1760
9705
1770
3611
3609
3607
9701
9702
9703
9704
9725
9726
9727
3622
6614
3620
To/From FR
1706
Interface
3773
3674
9707
9706
9708
9709
1703
Motor
ETF6 Non-Dolby
6612
6611
3685
6775
6776
2780
9710
3781
3785
9711
9712
3139_113_33711_01
6782
8239 210 83300
6778
9713
9714
9791
9716
9717
9792
6777
6771
6770
Oscillator
9793
3778
2782
2785
OSC
5703
2784
9719
2741
6774
6772
9720
6773
5702
5701
1710
7785
9718
6786
6785
Audio
9721
9722
9723
1730
2715
2713
2765
To/From AF
1701
9724
3764
2761
2716
2714
2763
2762
1
2
3
4
5
6

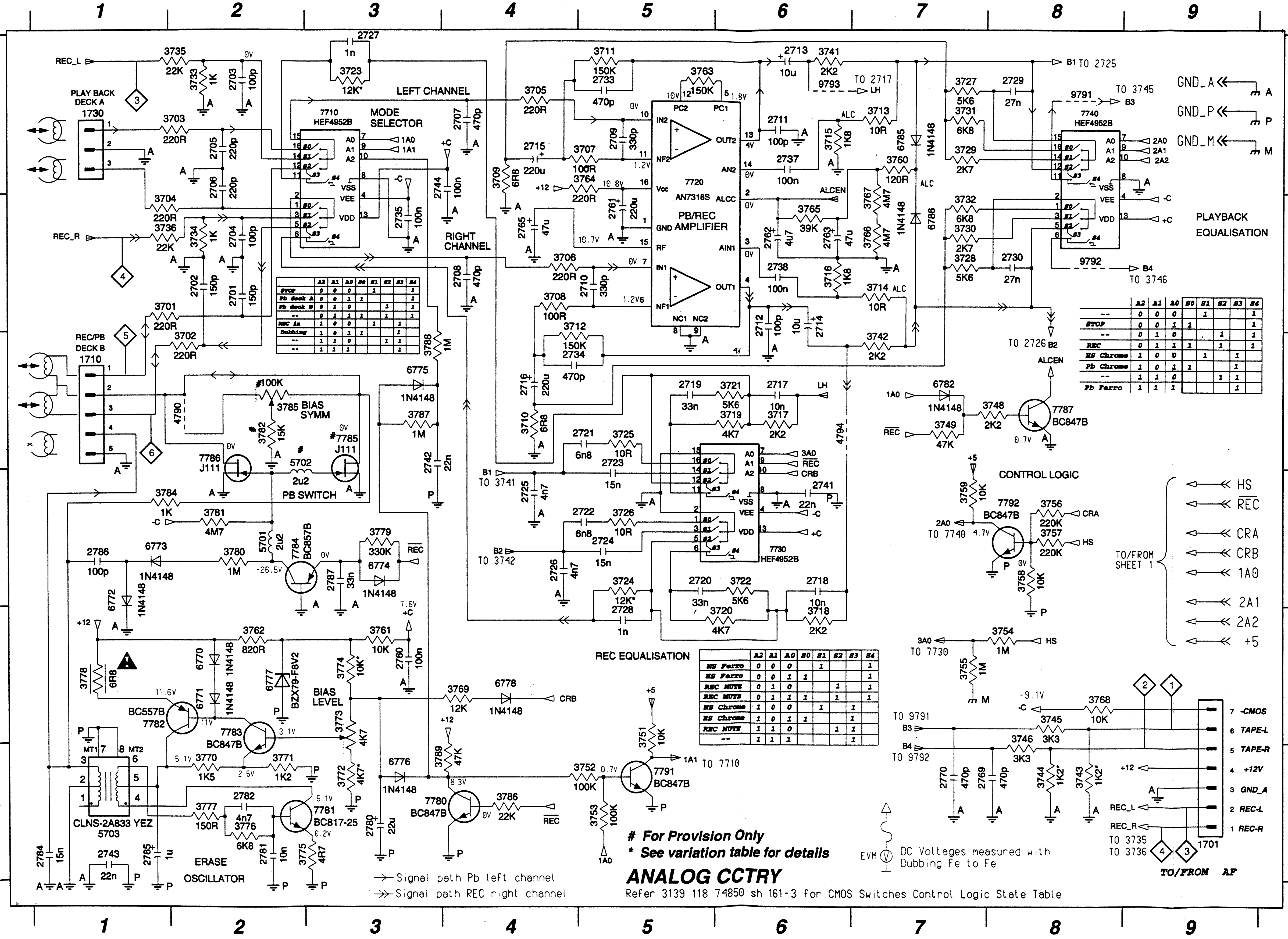
1701	C3
1703	A2
1706	A1
1710	C2
1730	C2
1770	A2
2713	B3
2714	C3
2715	B2
2716	C2
2741	C1
2761	C3
2762	C3
2763	C3
2765	C3
2780	B1
2784	C1
2785	B1
3607	A1
3609	A1
3611	A1
3620	A1
3622	A1
3674	A2
3685	A2
3761	B1
3764	C3
3773	A1
3778	B1
3785	B1
5701	C2
5702	C2
5703	C1
6611	A3
6612	A3
6614	A1
6770	B1
6771	B1
6772	C1
6773	C1
6774	C1
6775	A1
6776	B1
6777	B1
6778	B1
6782	B2
6785	B2
6786	B2
7782	B1
7785	C1
7786	C2
9701	A1
9702	A2
9703	A2
9704	A2
9705	A3
9706	A2
9707	A2
9708	A2
9709	A2
9710	B1
9711	B1
9712	B1
9713	B1
9714	B2
9715	B2
9716	B2
9717	B2
9718	B2
9719	C1
9720	C1
9721	C2
9722	C2
9723	C2
9724	C3
9725	A2
9726	A3
9727	A3
9728	A2
9791	B2
9792	B2
9793	B2

CHIP LAYOUT


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

2621	A2
2622	A3
2623	A3
2624	A2
2625	A3
2701	C3
2702	C2
2703	C2
2704	C2
2705	C2
2706	C2
2707	C2
2708	C2
2709	C2
2710	C2
2711	C1
2712	C1
2717	B2
2718	C3
2719	B3
2720	B3
2721	B2
2722	B2
2723	B2
2724	B3
2725	B3
2726	B3
2727	C3
2728	B2
2729	B2
2730	B2
2731	B2
2732	B2
2733	C1
2734	C1
2735	C2
2737	C1
2738	C1
2742	B3
2743	C3
2760	B3
2769	B1
2770	B1
2781	C3
2782	B3
2786	C3
2787	C3
3601	A2
3602	A2
3603	A2
3604	A2
3605	A2
3606	A1
3608	A3
3610	A3
3612	A3
3613	A2
3614	A3
3616	A3
3618	A3
3623	A1
3624	A1
3625	A1
3626	A1
3628	A1
3630	A1
3672	A3
3676	A2
3678	A1
3679	A1
3680	A1
3686	A3
3701	C3
3702	C2
3703	C2
3704	C2
3705	C2
3706	C2
3707	C2
3708	C2
3709	C2
3710	C2
3712	C2
3713	C1
3714	C1
3715	C1
3716	C1
3717	B2
3718	C3
3719	B3
3720	B3
3721	B3
3722	B3
3723	C3
3724	B2
3725	B2
3726	B2
3727	B2
3728	B2
3729	B2
3730	B2
3731	B2
3732	B2
3733	B2
3734	C2
3735	C2
3736	C2
3741	C2
3742	C1
3743	B1
3744	B1
3745	C1
3746	C1
3748	C1
3749	B2
3751	A2
3752	A2
3753	A2
3754	A2
3755	A2
3756	A2
3757	A2
3758	A2
3759	A2
3760	B2
3762	B3
3763	C1
3765	C1
3766	C1
3767	C1
3768	C1
3769	B3
3770	B3
3771	B3
3772	A3
3774	B3
3775	C3
3776	B3
3777	B3
3779	C3
3780	C3
3781	C2
3782	B3
3784	C2
3786	A3
3787	A3
3788	C3
3789	B3
4701	A2
4702	A2
4703	A2
4704	A1
4705	A1
4706	A1
4707	A3
4708	A3
4709	B3
4710	A3
4711	A3
4712	A2
4713	A2
4714	B2
4715	B2
4716	B2
4717	B2
4718	B2
4719	B3
4720	B2
4721	B2
4722	B2
4723	B2
4724	B2
4725	B2
4726	B2
4727	B2
4728	C2
4729	C2
4730	C2
4731	C1
4732	C3
4733	C3
4734	C2
4735	C2
4736	C2
4737	C2
4738	C1
4739	C1
4740	C1
4741	C2
4742	C2
4781	A3
4782	A3
4783	A3
4784	A1
4790	C3
4794	C1
7610	A3
7612	A1
7613	A2
7614	A1
7616	A3
7618	A1
7619	A1
7620	A1
7622	A2
7623	A2
7624	A3
7710	C2
7720	C2
7730	B3
7740	B2
7780	A3
7781	B3
7783	B3
7784	C3
7787	C1
7791	A2
7792	A2

ANALOG CIRCUIT


PLAY BACK DECK A
1730
REC/PB DECK B
1710
REC_L
REC_R
3735 22K
3733 1K
2703 100p
3703 220R
3704 220R
3736 22K
3734 1K
2704 100p
2705 220p
2706 220p
2702 150p
2701 150p
3701 220R
3702 220R
2727 1n
3723 12K*
LEFT CHANNEL
7710 HEF4952B
MODE SELECTOR
2707 470p
2744 100n
2735 100n
RIGHT CHANNEL
2708 470p
3705 220R
3706 220R
3709 6R8
2765 47u
2715 220u
3711 150K
2733 470p
3707 100R
3764 220R
2709 330p
2761 220u
3763 150K
7720 AN7318S
PB/REC AMPLIFIER
3708 100R
2710 330p
3712 150K
2734 470p
2716 220u
3710 6R8
2713 10u
3741 2K2
9793
TO 2717 LH
2711 100p
2737 100n
3715 1K8
3713 10R
3760 120R
3765 39K
2762 4u7
2763 47u
3767 4M7
3766 4M7
2738 100n
3716 1K8
3714 10R
2712 100p
2714 10u
3742 2K2
6785 1N4148
6786 1N4148
ALC
ALCEN
B1 TO 2725
3727 5K6
2729 27n
3731 6K8
3729 2K7
3732 6K8
3730 2K7
3728 5K6
2730 27n
9791 TO 3745 B3
9792 B4 TO 3746
7740 HEF4952B
PLAYBACK EQUALISATION
GND_A
GND_P
GND_M
TO 2726 B2
2719 33n
3721 5K6
3719 4K7
2717 10n
3717 2K2
2721 6n8
3725 10R
2723 15n
2722 6n8
3726 10R
2724 15n
7730 HEF4952B
2741 22n
B1 TO 3741
2725 4n7
B2 TO 3742
2726 4n7
3724 12K*
2728 1n
2720 33n
3722 5K6
3720 4K7
2718 10n
3718 2K2
REC EQUALISATION
4794
4790
3785 100K BIAS SYMM
3782 15K
7786 J111
7785 J111
5702 2u2
PB SWITCH
6775 1N4148
3787 1M
3788 1M
2742 22n
3784 1K
3781 4M7
5701 2u2
7784 BC857B
3779 330K
6774 1N4148
2787 33n
2786 100p
6773 1N4148
3780 1M
6772 1N4148
3778 6R8
3762 820R
6770 1N4148
6771 1N4148
6777 BZX79-F8V2
3761 10K
2760 100n
3774 10K*
BIAS LEVEL
3773 4K7
3772 4K7*
7782 BC557B
7783 BC847B
3770 1K5
3771 1K2
5703 CLNS-2A833 YEZ
3777 150R
2782 4n7
3776 6K8
7781 BC817-25
3775 4R7
2781 10n
2784 15n
2743 22n
2785 1u
ERASE OSCILLATOR
2780 22u
6776 1N4148
3789 47K
7780 BC847B
3786 22K
3769 12K
6778 1N4148
CRB
3752 100K
3753 100K
7791 BC847B
3751 10K
1A1 TO 7710
6782 1N4148
3748 2K2
3749 47K
7787 BC847B
CONTROL LOGIC
3759 10K
7792 BC847B
2A0 TO 7740
3756 220K
3757 220K
3758 10K
3754 1M
3A0 TO 7730
3755 1M
TO/FROM SHEET 1
HS
REC
CRA
CRB
1A0
2A1
2A2
+5
3768 10K
3745 3K3
3746 3K3
TO 9791 B3
B4 TO 9792
2770 470p
2769 470p
3744 1K2*
3743 1K2*
1701
7 -CMOS
6 TAPE-L
5 TAPE-R
4 +12V
3 GND_A
2 REC-L
1 REC-R
TO 3735
TO 3736
TO/FROM AF
# For Provision Only
* See variation table for details
EVM DC Voltages measured with Dubbing Fe to Fe
ANALOG CCTRY
Refer 3139 118 74850 sh 161-3 for CMOS Switches Control Logic State Table
Signal path Pb left channel
Signal path REC right channel

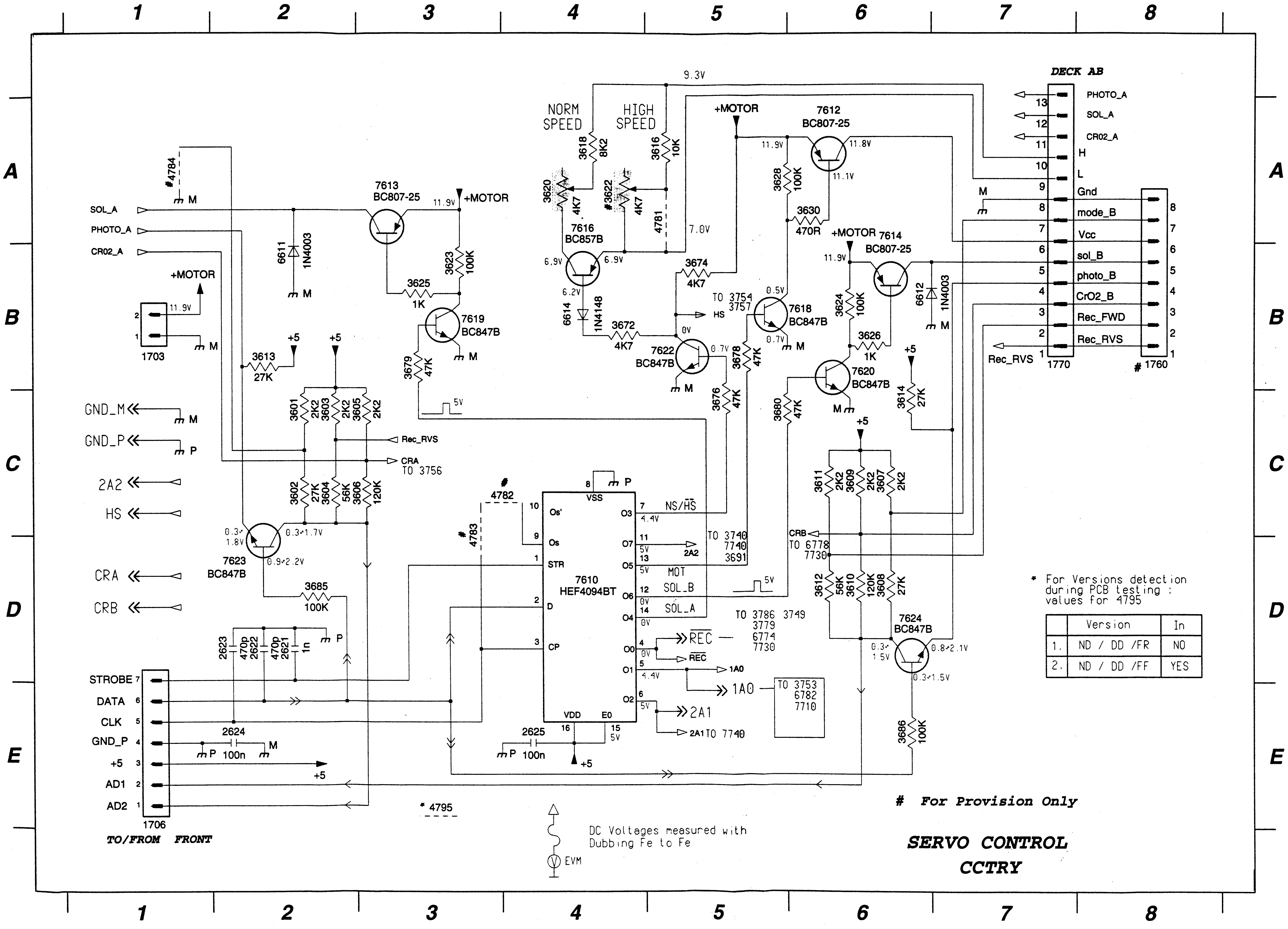
	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0		1			1
Pb deck A	0	0	1	1				1
Pb deck B	0	1	0			1		1
--	0	1	1	1		1		1
REC in	1	0	0		1		1	
Dubbing	1	0	1	1			1	
--	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0		1			1
STOP	0	0	1	1				1
--	0	1	0			1		1
REC	0	1	1	1		1		1
HS Chrome	1	0	0		1		1	
Pb Chrome	1	0	1	1			1	
--	1	1	0			1	1	
Pb Ferro	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0		1			1
HS Ferro	0	0	1	1				1
REC MUTE	0	1	0			1		1
REC MUTE	0	1	1	1		1		1
NS Chrome	1	0	0		1		1	
HS Chrome	1	0	1	1			1	
REC MUTE	1	1	0			1	1	
--	1	1	1				1	

1701	F9
1710	C1
1730	A1
2701	B2
2702	B2
2703	A2
2704	B2
2705	A2
2706	A2
2707	A4
2708	B4
2709	A5
2710	B5
2711	A6
2712	B6
2713	A6
2714	B6
2715	A4
2716	C4
2717	C6
2718	D6
2719	C5
2720	D5
2721	C5
2722	D5
2723	C5
2724	D5
2725	D4
2726	D4
2727	A3
2728	E5
2729	A8
2730	B8
2733	A5
2734	C4
2735	B3
2737	A6
2738	B6
2741	D6
2742	C3
2743	F1
2744	A3
2760	E3
2761	B5
2762	B6
2763	B6
2765	B4
2769	F7
2770	F7
2780	F3
2781	F2
2782	F2
2784	F1
2785	F1
2786	D1
2787	D3
3701	B1
3702	C2
3703	A2
3704	B1
3705	A4
3706	B4
3707	A5
3708	B4
3709	A4
3710	C4
3711	A5
3712	B4
3713	A7
3714	B7
3715	A6
3716	B6
3717	C6
3718	E6
3719	C6
3720	E6
3721	C6
3722	D6
3723	A3
3724	D5
3725	C5
3726	D5
3727	A7
3728	B7
3729	A7
3730	B7
3731	A7
3732	B7
3733	A2
3734	B2
3735	A2
3736	B1
3741	A6
3742	C7
3743	F8
3744	F8
3745	E8
3746	E8
3748	C8
3749	C7
3751	E5
3752	F5
3753	F5
3754	E8
3755	E7
3756	D8
3757	D8
3758	D8
3759	D7
3760	A7
3761	E3
3762	E2
3763	A5
3764	A5
3765	B6
3766	B7
3767	B7
3768	E8
3769	E4
3770	F2
3771	F2
3772	F3
3773	E3
3774	E3
3775	F2
3776	F2
3777	F2
3778	E1
3779	D3
3780	D2
3781	D2
3782	C2
3784	D1
3785	C2
3786	F4
3787	C3
3788	C3
3789	F3
4790	C2
4794	C6
5701	D2
5702	C2
5703	F1
6770	E2
6771	E2
6772	D1
6773	D1
6774	D3
6775	C3
6776	F3
6777	E2
6778	E4
6782	C7
6785	A7
6786	B7
7710	A3
7720	A5
7730	D6
7740	A8
7780	F4
7781	F3
7782	E1
7783	E2
7784	D2
7785	C3
7786	C2
7787	C8
7791	F5
7792	D8
9791	A8
9792	B8
9793	A6

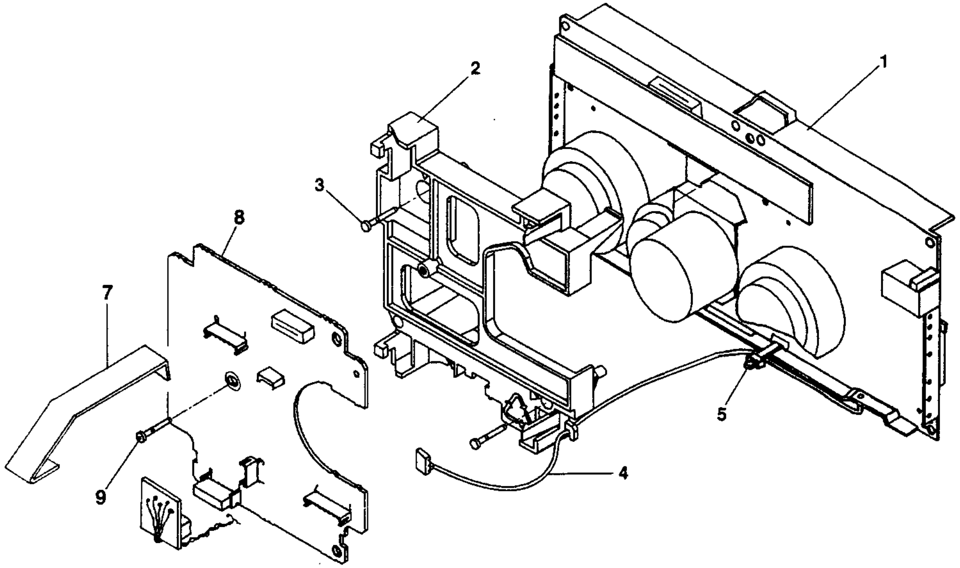
SERVO CONTROL CIRCUIT


1 2 3 4 5 6 7 8
A B C D E
DECK AB
PHOTO_A
SOL_A
CR02_A
H
L
Gnd
mode_B
Vcc
sol_B
photo_B
CrO2_B
Rec_FWD
Rec_RVS
1770
# 1760
NORM SPEED
HIGH SPEED
9.3V
+MOTOR
7612 BC807-25
7613 BC807-25
7614 BC807-25
7616 BC857B
7618 BC847B
7619 BC847B
7620 BC847B
7622 BC847B
7623 BC847B
7624 BC847B
7610 HEF4094BT
SOL_A
PHOTO_A
CR02_A
1703
GND_M
GND_P
2A2
HS
CRA
CRB
Rec_RVS
CRA TO 3756
TO 3754 3757
NS/HS
MOT
SOL_B
SOL_A
TO 3740 7740 3691
CRB
TO 6778 7730
TO 3786 3749 3779 6774 7730
REC
1A0
TO 3753 6782 7710
2A1
2A1 TO 7740
STROBE
DATA
CLK
GND_P
+5
AD1
AD2
1706
TO/FROM FRONT
* 4795
DC Voltages measured with Dubbing Fe to Fe
EVM
# For Provision Only
SERVO CONTROL CCTRY

* For Versions detection during PCB testing : values for 4795

	Version	In
1.	ND / DD /FR	NO
2.	ND / DD /FF	YES

1703	B1
1706	E1
1760	B8
1770	B7
2621	D2
2622	D2
2623	D2
2624	E2
2625	E4
3601	C2
3602	C2
3603	C2
3604	C2
3605	C3
3606	C3
3607	C6
3608	D6
3609	C6
3610	D6
3611	C6
3612	D6
3613	B2
3614	C6
3616	A5
3618	A4
3620	A4
3622	A4
3623	B3
3624	B6
3625	B3
3626	B6
3628	A5
3630	A6
3672	B4
3674	B5
3676	C5
3678	B5
3679	B3
3680	C5
3685	D2
3686	E6
4781	A5
4782	C4
4783	C3
4784	A1
4795	E3
6611	B2
6612	B6
6614	B4
7610	D4
7612	A6
7613	A3
7614	A6
7616	A4
7618	B6
7619	B3
7620	B6
7622	B5
7623	D2
7624	D6



ETF6 TAPE MODULE EXPLODED VIEW

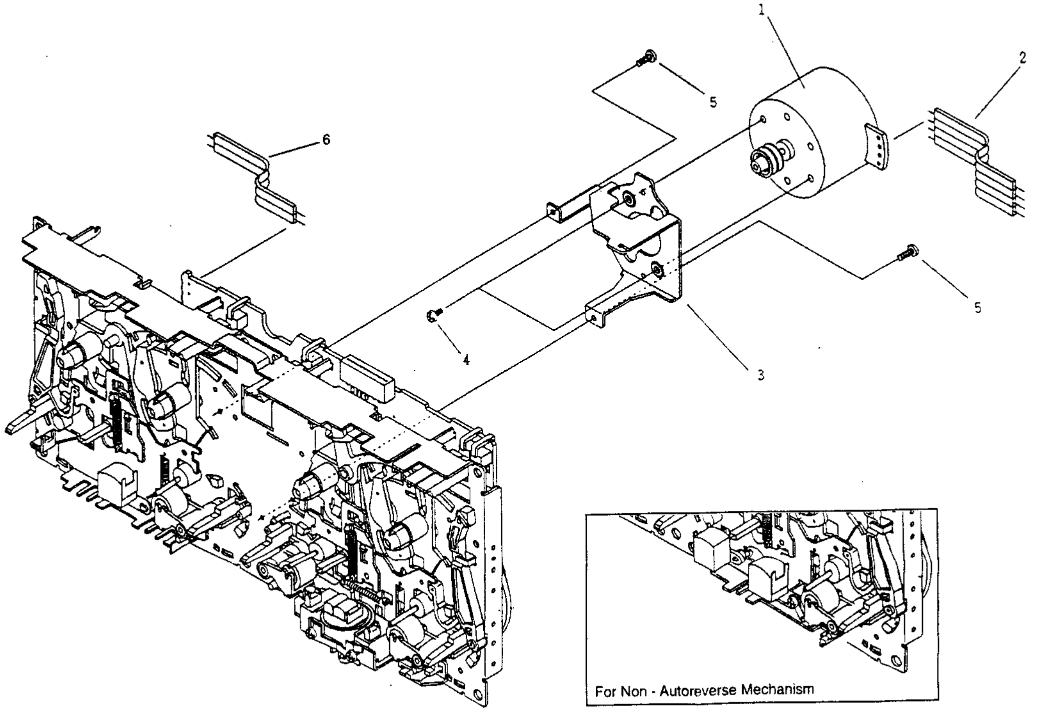
1	4822 691 10673	Autoreverse Mech. CWC44FR02
1	4822 691 10672	Non-Autoreverse Mech. CWC44FF01
3	-	Screw M2 x 16
7	4822 320 12245	Flex Cable 13 pin 7,5 cm
9	-	Screw D3 x 10

Note: Only the parts mentioned in this list are normal service spare parts.

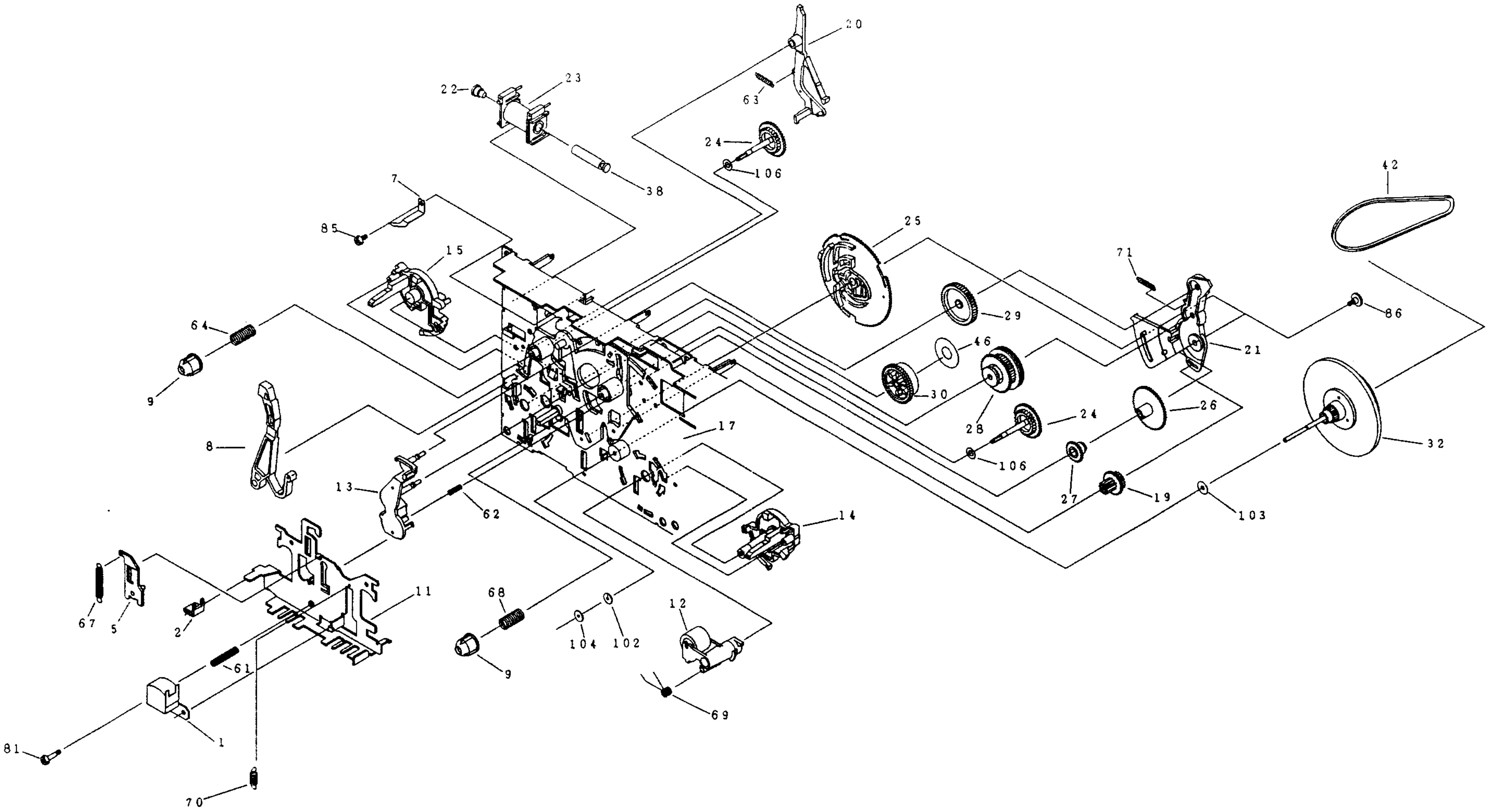
TAPE MECHANISM - MOTOR EXPLODED VIEW

1	4822 361 11055	Motor Assembly
4	-	Screw M2,6 x 4
5	-	Screw M2 x 3

Note: Only the parts mentioned in this list are normal service spare parts.


1
2
3
4
5
5
6
For Non - Autoreverse Mechanism

TAPE MECHANISM A - PLAY


20
63
22
23
24
106
38
7
85
15
42
25
71
64
9
29
86
46
21
8
30
17
28
24
26
32
13
106
62
27
19
14
103
11
67
5
2
68
12
61
104
102
9
69
1
81
70

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	MS15RAA2N1
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
42	4822 358 10168	Belt AF
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.

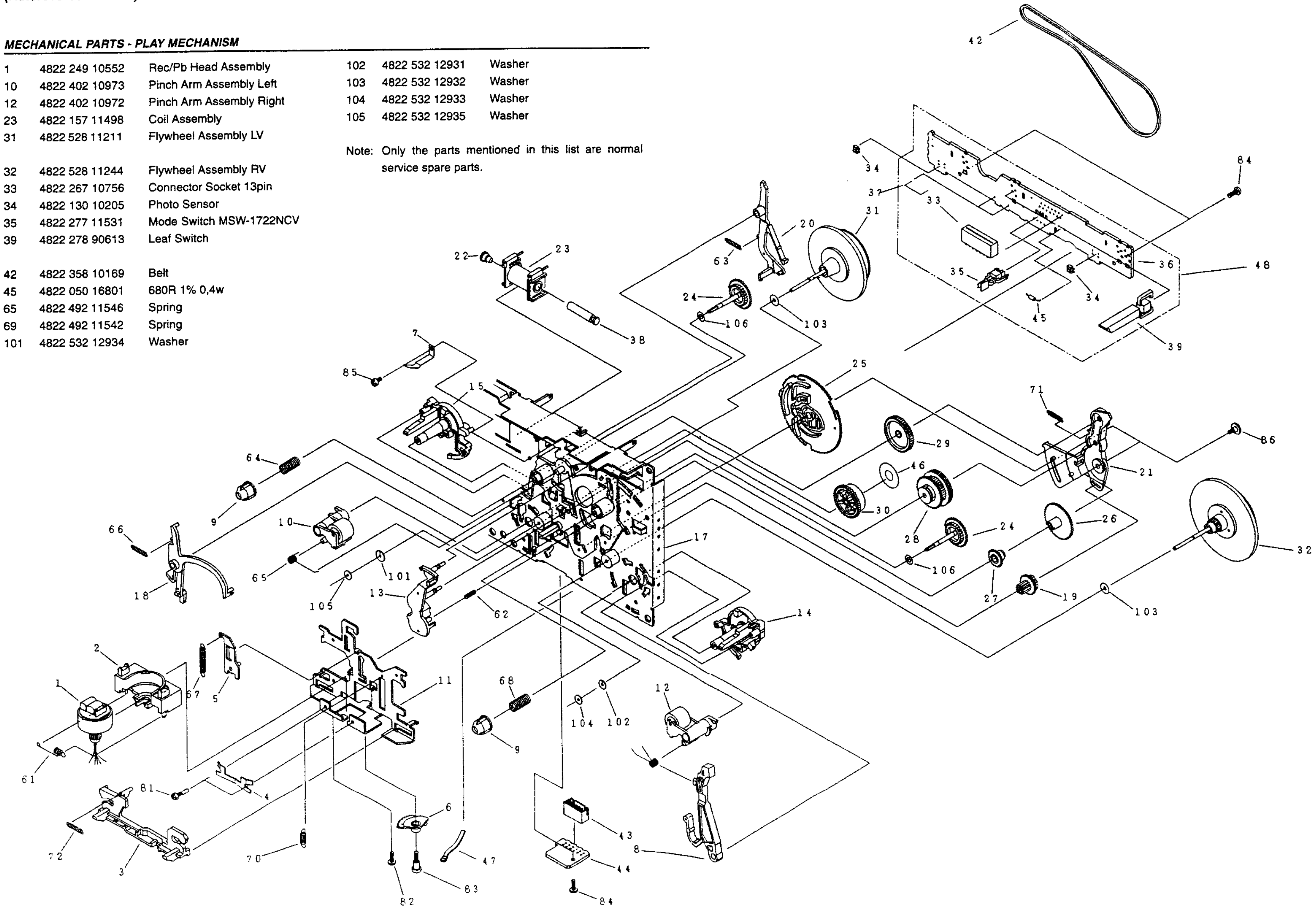
TAPE MECHANISM B - RECORD/PLAYBACK

(Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10552	Rec/Pb Head Assembly
10	4822 402 10973	Pinch Arm Assembly Left
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
31	4822 528 11211	Flywheel Assembly LV
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10169	Belt
45	4822 050 16801	680R 1% 0,4w
65	4822 492 11546	Spring
69	4822 492 11542	Spring
101	4822 532 12934	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


42
84
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31
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34
45
39
22
23
24
106
103
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7
85
15
25
71
86
29
46
21
64
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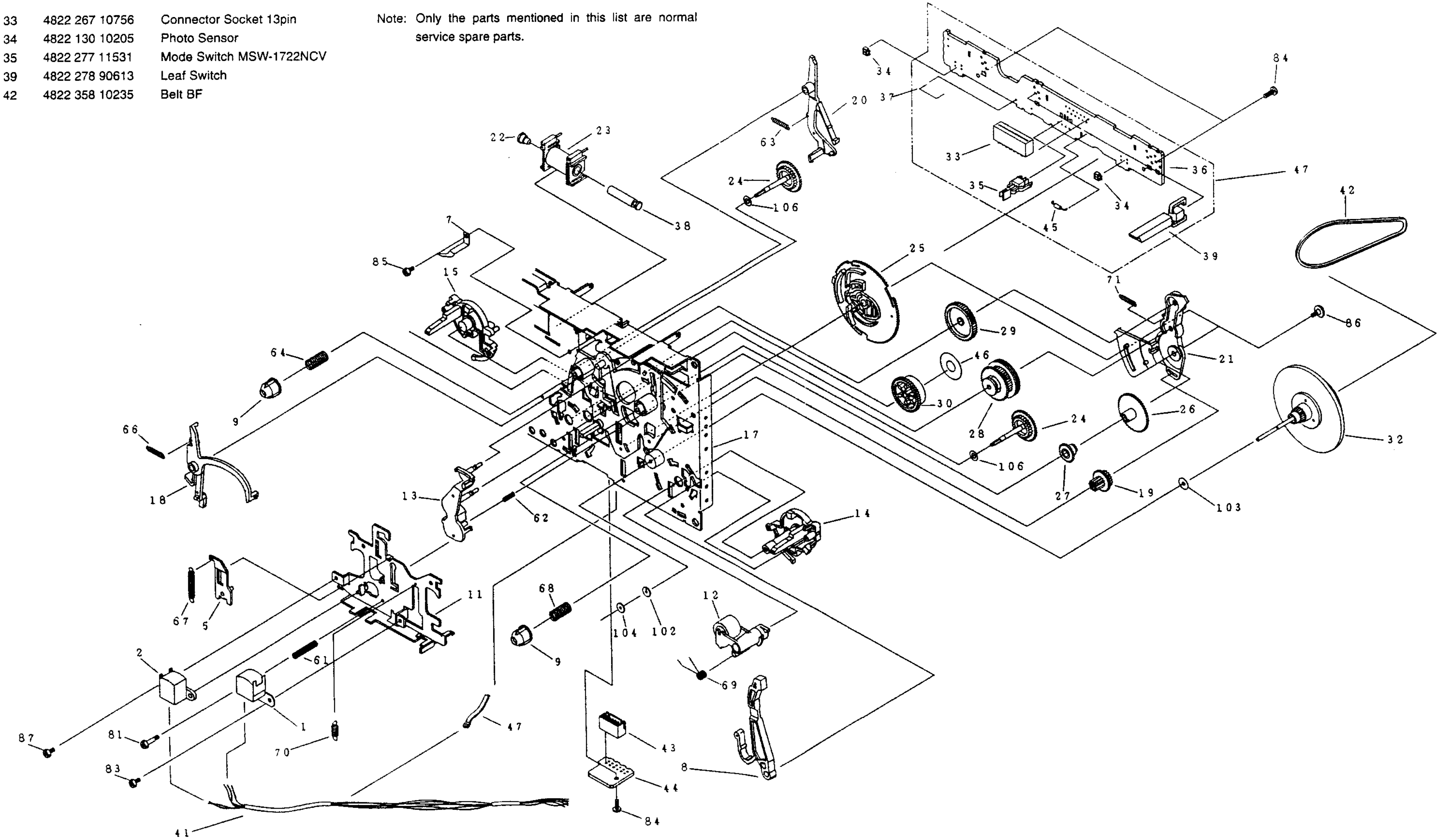
26
28
24
66
10
17
32
65
101
106
27
19
103
18
13
105
62
14
2
67
5
11
68
12
1
104
102
9
61
81
4
6
43
72
70
47
8
44
3
82
83
84

TAPE MECHANISM B - RECORD/PLAYBACK
(Non-Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	Rec/Pb Head Assembly
2	4822 249 40303	Erase Head
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10235	Belt BF
45	4822 050 16801	680R 1% 0,4w
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


34
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84
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106
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42
38
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85
15
71
29
86
64
46
21
30
26
28
24
32
66
9
17
106
18
13
27
19
103
62
14
11
68
12
67
5
104
102
9
69
2
61
47
87
81
1
70
43
8
83
44
84
41

ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

MISCELLANEOUS

1770	4822 267 10738	Flex Cable Socket 13Pin

CAPACITORS

2621	5322 122 34123	1nF 10% 50V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 13296	100nF 10% 16V
2625	4822 126 13296	100nF 10% 16V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2705	4822 122 33575	220pF 5% 50V
2706	4822 122 33575	220pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 50V
2710	5322 122 31863	330pF 5% 50V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 41579	10µF 20% 50V
2714	4822 124 41579	10µF 20% 50V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 63V
2720	4822 126 12105	33nF 5% 63V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 34123	1nF 10% 50V
2728	5322 122 34123	1nF 10% 50V
2729	4822 122 32541	27nF 10% 63V
2730	4822 122 32541	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 13296	100nF 10% 16V
2737	4822 126 13296	100nF 10% 16V
2738	4822 126 13296	100nF 10% 16V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 13296	100nF 10% 16V
2760	4822 126 13296	100nF 10% 16V
2761	4822 124 22263	220µF 20% 25V
2762	4822 124 40246	4,7µF 20% 63V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 40242	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 63V

RESISTORS

3601	4822 117 11449	2k2 1% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 1% 0,1W
3604	4822 051 20563	56k 5% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 051 20563	56k 5% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3616	4822 117 10833	10k 1% 0,1W
3618	4822 051 20822	8k2 5% 0,1W
3620	5322 100 11542	Trimmer 4k7 30% 0,1W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 051 20104	100k 5% 0,1W
3630	4822 051 20471	470R 5% 0,1W
3672	4822 051 20472	4k7 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3679	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 051 20104	100k 5% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3703	4822 117 11503	220R 1% 0.1W
3704	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 051 20101	100R 5% 0,1W
3708	4822 051 20101	100R 5% 0,1W
3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W

ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 1% 0,1W
3718	4822 117 11449	2k2 1% 0,1W
3719	4822 051 20472	4k7 5% 0,1W
3720	4822 051 20472	4k7 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W For Autoreverse
3723	4822 051 20153	15k 5% 0,1W For Non-autorev.
3724	4822 117 11383	12k 1% 0,1W For Autoreverse
3724	4822 051 20153	15k 5% 0,1W For Non-autorev.
3725	4822 051 20109	10R 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732	4822 117 11507	6k8 1% 0,1W
3733	4822 051 10102	1k 2% 0,25W
3734	4822 051 10102	1k 2% 0,25W
3735	4822 051 20223	22k 5% 0,1W
3736	4822 051 20223	22k 5% 0,1W
3741	4822 117 11449	2k2 1% 0,1W
3742	4822 117 11449	2k2 1% 0,1W
3743	4822 051 20122	1k2 5% 0,1W For Autoreverse
3743	4822 051 10102	1k 2% 0,25W For Non-autorev.
3744	4822 051 20122	1k2 5% 0,1W For Autoreverse
3744	4822 051 10102	1k 2% 0,25W For Non-autorev.
3745	4822 051 20332	3k3 5% 0,1W
3746	4822 051 20332	3k3 5% 0,1W
3748	4822 117 11449	2k2 1% 0,1W
3749	4822 117 10834	47k 1% 0,1W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 051 20104	100k 5% 0,1W
3753	4822 051 20104	100k 5% 0,1W
3754	4822 051 20105	1M 5% 0,1W
3755	4822 051 20105	1M 5% 0,1W
3756	4822 051 20224	220k 5% 0,1W
3757	4822 051 20224	220k 5% 0,1W
3758	4822 117 10833	10k 1% 0,1W
3759	4822 117 10833	10k 1% 0,1W
3760	4822 051 20121	120R 5% 0,1W
3761	4822 116 83864	10k 5% 0,5W
3762	4822 117 11454	820R 1% 0,1W
3763	4822 051 20154	150k 5% 0,1W
3764	4822 116 83872	220R 5% 0,5W
3765	4822 051 20393	39k 5% 0,1W
3766	4822 051 20475	4M7 5% 0,1W
3767	4822 051 20475	4M7 5% 0,1W
3768	4822 117 10833	10k 1% 0,1W
3769	4822 117 11383	12k 1% 0,1W
3769	4822 051 20822	8k2 5% 0,1W
3770	4822 117 11139	1k5 1% 0,1W
3771	4822 051 20122	1k2 5% 0,1W
3772	4822 051 20472	4k7 5% 0,1W For Autoreverse
3772	4822 051 20562	5k6 5% 0,1W For Non-autorev.
3773	5322 100 11542	Trimmer 4k7 30% 0,1W
3774	4822 117 10833	10k 1% 0,1W For Autoreverse
3774	4822 051 20822	8k2 5% 0,1W For Non-autorev.
3775	4822 051 20478	4R7 5% 0,1W
3776	4822 117 11507	6k8 1% 0,1W
3777	4822 117 10353	150R 1% 0,1W
3778	4822 052 10688 ⚠	6R8 5% 0,33W
3779	4822 051 20334	330k 5% 0,1W
3780	4822 051 20105	1M 5% 0,1W
3781	4822 051 20475	4M7 5% 0,1W
3784	4822 051 10102	1k 2% 0,25W
3786	4822 051 20223	22k 5% 0,1W
3787	4822 051 20105	1M 5% 0,1W
3788	4822 051 20105	1M 5% 0,1W
3789	4822 117 10834	47k 1% 0,1W
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805
4704	4822 051 20008	0R Jumper 0805
4705	4822 051 20008	0R Jumper 0805
4706	4822 051 20008	0R Jumper 0805
4707	4822 051 20008	0R Jumper 0805
4708	4822 051 20008	0R Jumper 0805
4709	4822 051 20008	0R Jumper 0805
4710	4822 051 20008	0R Jumper 0805
4711	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805
4717	4822 051 20008	0R Jumper 0805
4718	4822 051 20008	0R Jumper 0805
4719	4822 051 20008	0R Jumper 0805
4720	4822 051 20008	0R Jumper 0805
4721	4822 051 20008	0R Jumper 0805
4722	4822 051 20008	0R Jumper 0805
4723	4822 051 20008	0R Jumper 0805
4724	4822 051 20008	0R Jumper 0805
4725	4822 051 20008	0R Jumper 0805
4726	4822 051 20008	0R Jumper 0805
4727	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - ETF6 NON-DOLBY BOARD

RESISTORS

4728	4822 051 20008	0R Jumper 0805
4729	4822 051 20008	0R Jumper 0805
4730	4822 051 20008	0R Jumper 0805
4731	4822 051 20008	0R Jumper 0805
4732	4822 051 20008	0R Jumper 0805
4733	4822 051 20008	0R Jumper 0805
4734	4822 051 20008	0R Jumper 0805
4735	4822 051 20008	0R Jumper 0805
4736	4822 051 20008	0R Jumper 0805
4737	4822 051 20008	0R Jumper 0805
4738	4822 051 20008	0R Jumper 0805
4739	4822 051 20008	0R Jumper 0805
4740	4822 051 20008	0R Jumper 0805
4741	4822 051 20008	0R Jumper 0805
4742	4822 051 20008	0R Jumper 0805
4781	4822 051 20008	0R Jumper 0805
4790	4822 051 20008	0R Jumper 0805
4794	4822 051 20008	0R Jumper 0805
4795	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5701	4822 156 21721	Coil 2,2µH 10%
5703	4822 156 20946	Osc Coil 100kHz

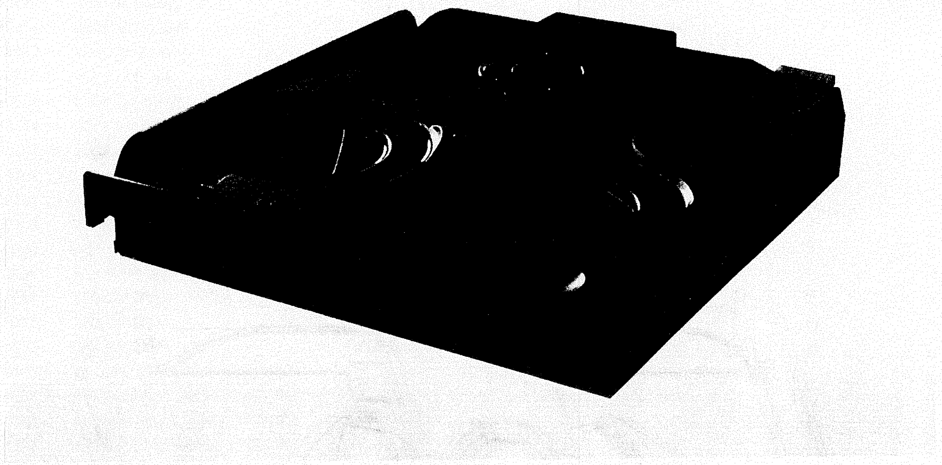
DIODES

6611	4822 130 31878	1N4003G
6612	4822 130 31878	1N4003G
6614	4822 130 30621	1N4148
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-F8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7613	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7616	5322 130 60508	BC857B
7618	4822 130 60511	BC847B
7619	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7622	4822 130 60511	BC847B
7623	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	4822 130 60511	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	5322 130 60508	BC857B
7786	4822 130 63494	J111
7787	4822 130 60511	BC847B
7791	4822 130 60511	BC847B
7792	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



3CDC Module

(3 Disc Carrousel Changer)

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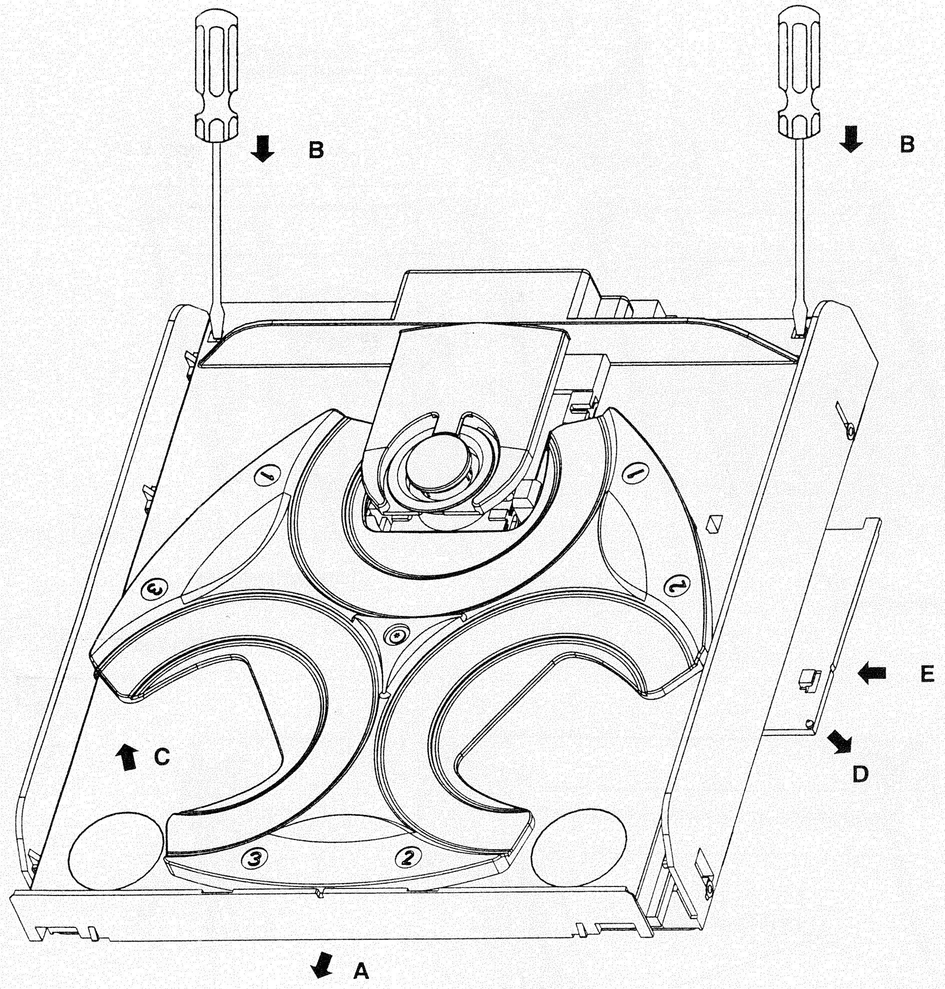
Demounting Hints



Demounting of Drawer

- → **A** Pull drawer outwards
- → **B** Unlock drawer with screwdriver
- → **C** Lift drawer to demount from chassis

Demounting of Flex Plate

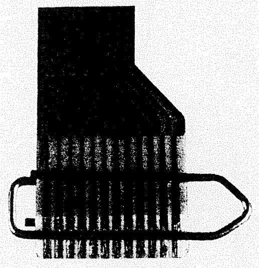
- → **D** Lift plate to unlock pin from bottom plate
- → **E** Move plate inwards to demount from bottom plate

Servicing Hints

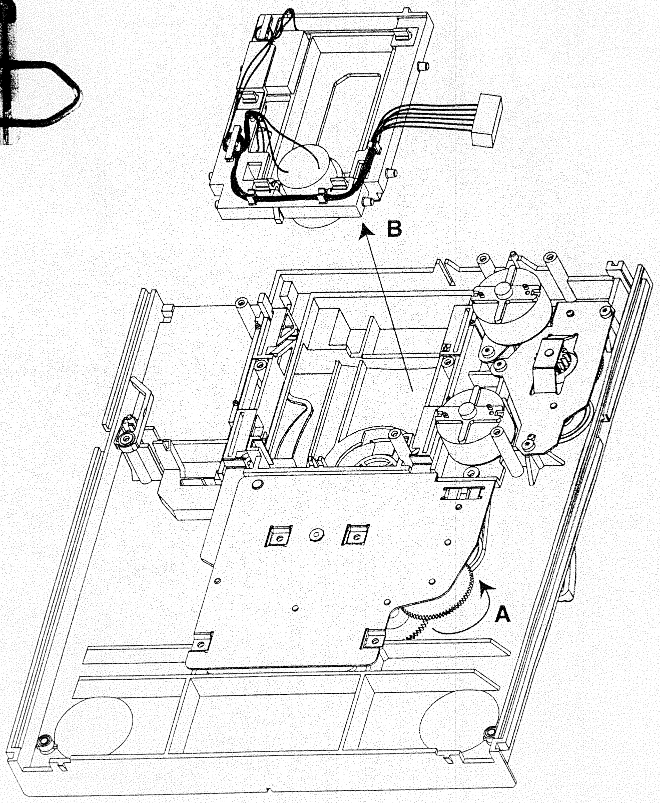
Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount flex plate (pos 140).
2. Demount printed circuit board: remove 6 screws and desolder lips of tray motor and carrousel motor.
3. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
4. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
5. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
6. Demount CD drive support (pos 95) Ⓑ.
7. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.



CD drive flex foil

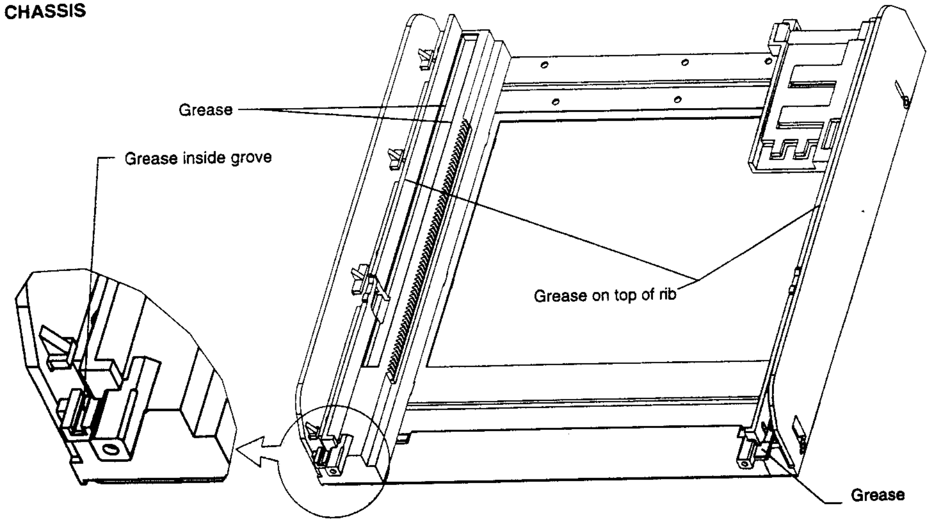


Mounting of Carrousel

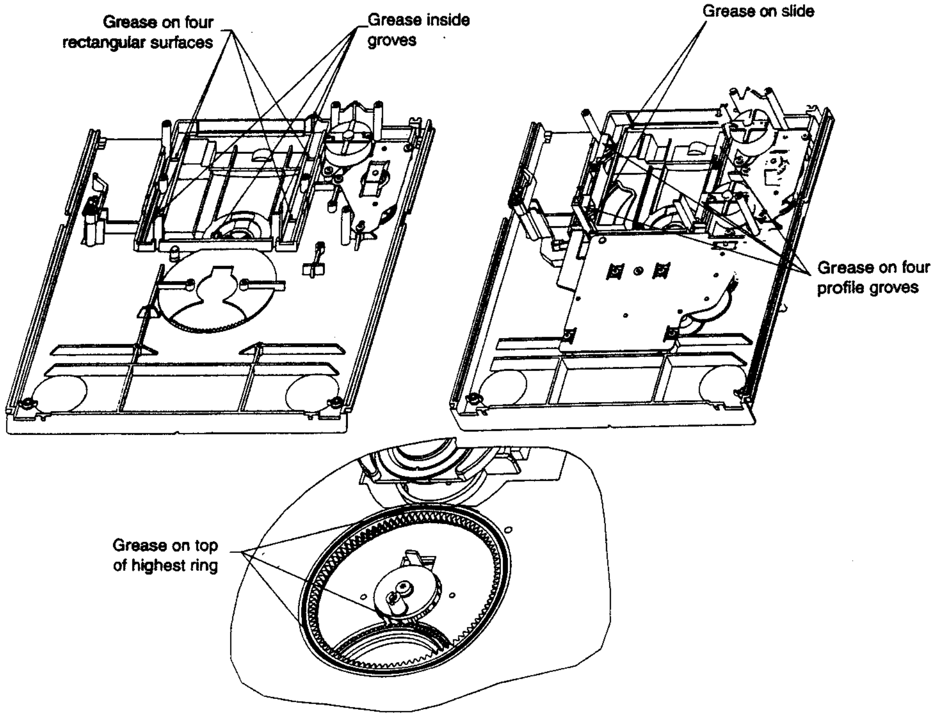
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn´t matter.

Lubrication Instructions

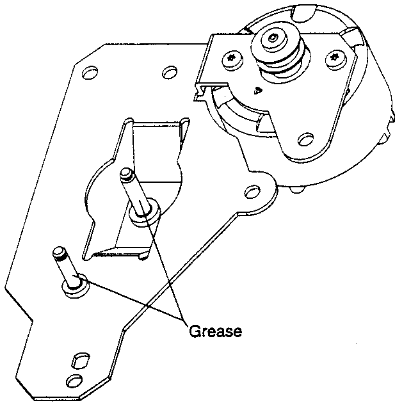
CHASSIS


Grease
Grease inside grove
Grease on top of rib
Grease

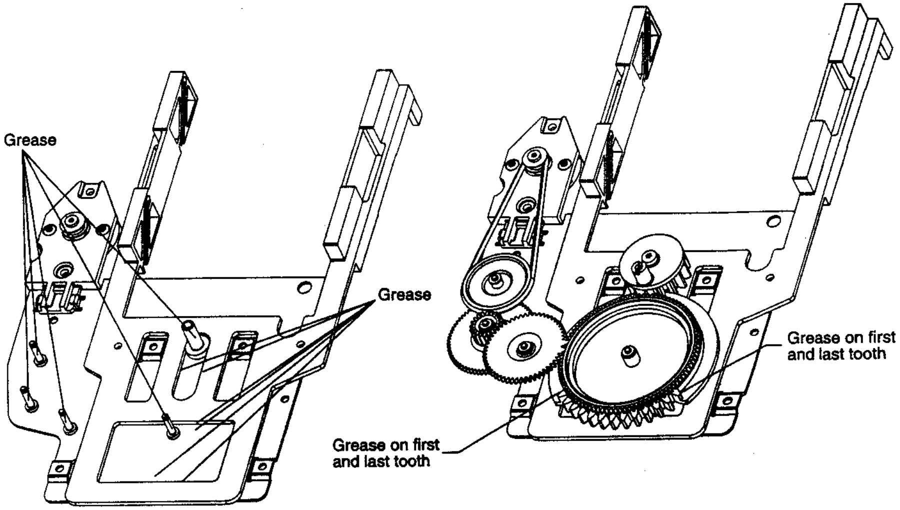
DRAWER


Grease on four rectangular surfaces
Grease inside groves
Grease on slide
Grease on four profile groves
Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM


Grease
Grease
Grease on first and last tooth
Grease on first and last tooth

Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

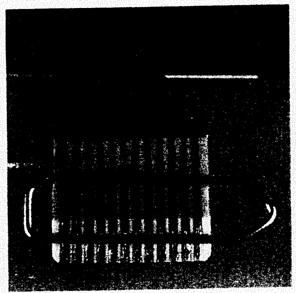


fig.1

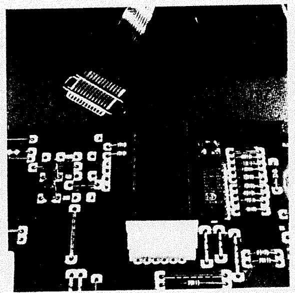


fig.2

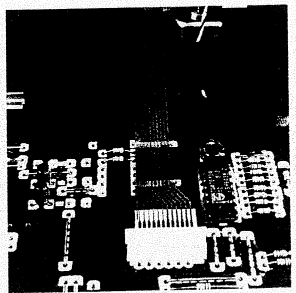
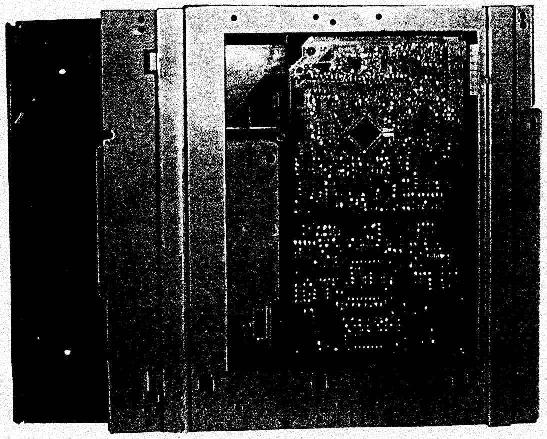


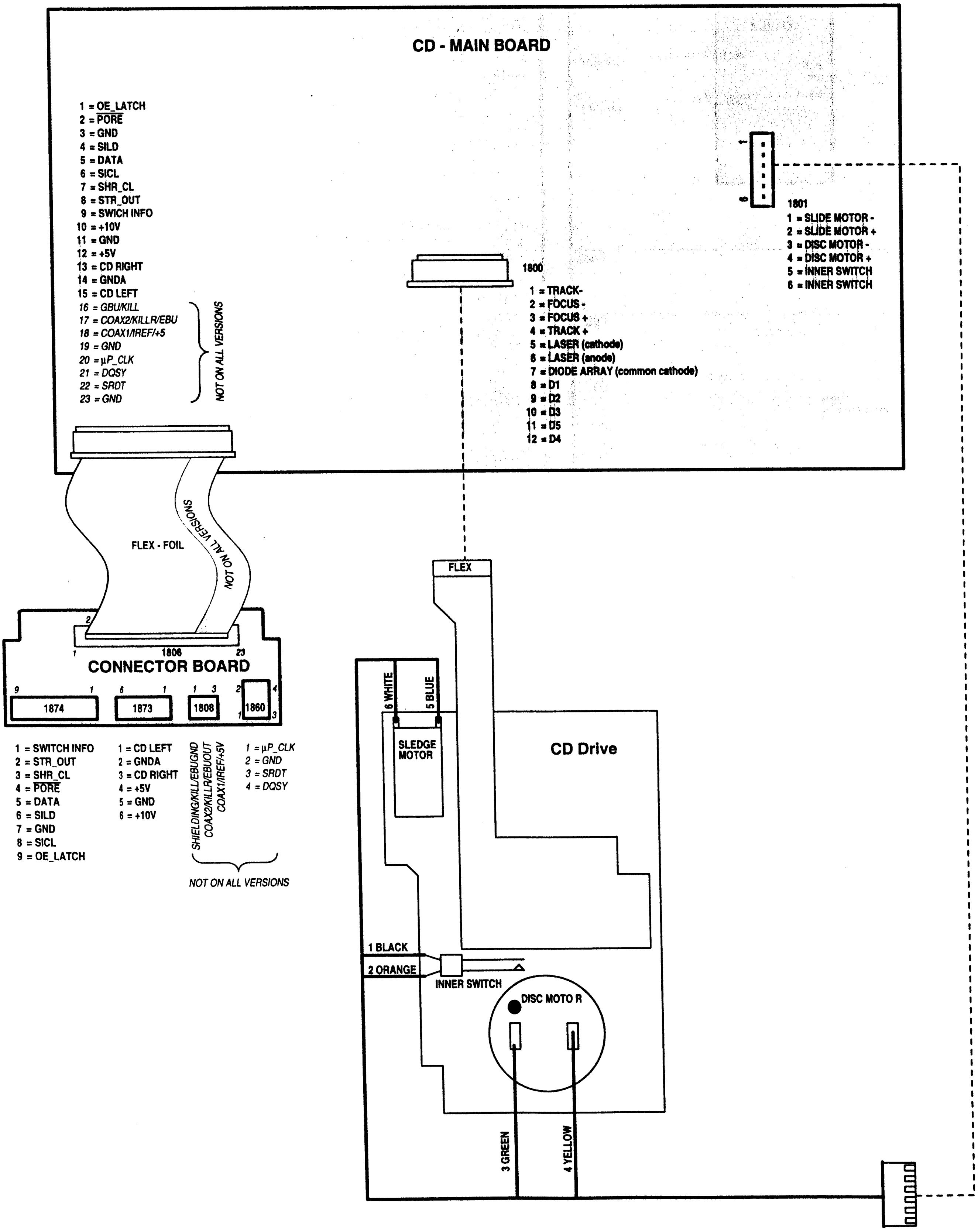
fig.3

Service Position

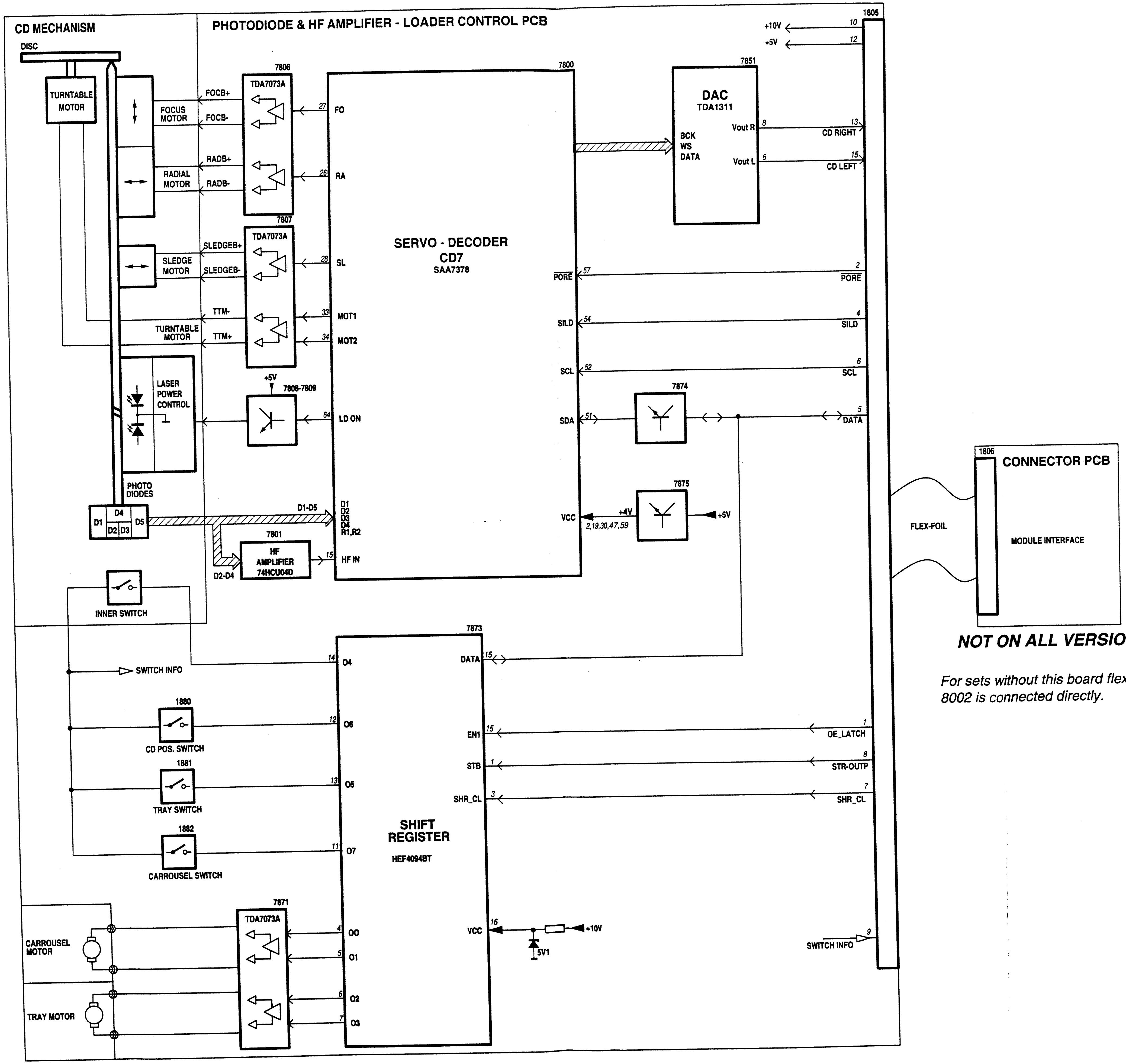


Wiring diagram

Remark


CD - MAIN BOARD
1 = OE_LATCH
2 = PORE
3 = GND
4 = SILD
5 = DATA
6 = SICL
7 = SHR_CL
8 = STR_OUT
9 = SWICH INFO
10 = +10V
11 = GND
12 = +5V
13 = CD RIGHT
14 = GNDA
15 = CD LEFT
16 = GBU/KILL
17 = COAX2/KILLR/EBU
18 = COAX1/IREF/+5
19 = GND
20 = µP_CLK
21 = DQSY
22 = SRDT
23 = GND
NOT ON ALL VERSIONS
1800
1 = TRACK-
2 = FOCUS -
3 = FOCUS +
4 = TRACK +
5 = LASER (cathode)
6 = LASER (anode)
7 = DIODE ARRAY (common cathode)
8 = D1
9 = D2
10 = D3
11 = D5
12 = D4
1
6
1801
1 = SLIDE MOTOR -
2 = SLIDE MOTOR +
3 = DISC MOTOR -
4 = DISC MOTOR +
5 = INNER SWITCH
6 = INNER SWITCH
FLEX - FOIL
NOT ON ALL VERSIONS
FLEX
2
1
1806
23
CONNECTOR BOARD
9
1
1874
6
1
1873
1
3
1808
2
4
1860
1
3
1 = SWITCH INFO
2 = STR_OUT
3 = SHR_CL
4 = PORE
5 = DATA
6 = SILD
7 = GND
8 = SICL
9 = OE_LATCH
1 = CD LEFT
2 = GNDA
3 = CD RIGHT
4 = +5V
5 = GND
6 = +10V
SHIELDING/KILL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
1 = µP_CLK
2 = GND
3 = SRDT
4 = DQSY
NOT ON ALL VERSIONS
6 WHITE
5 BLUE
SLEDGE MOTOR
CD Drive
1 BLACK
2 ORANGE
INNER SWITCH
DISC MOTO R
3 GREEN
4 YELLOW

Blockdiagram

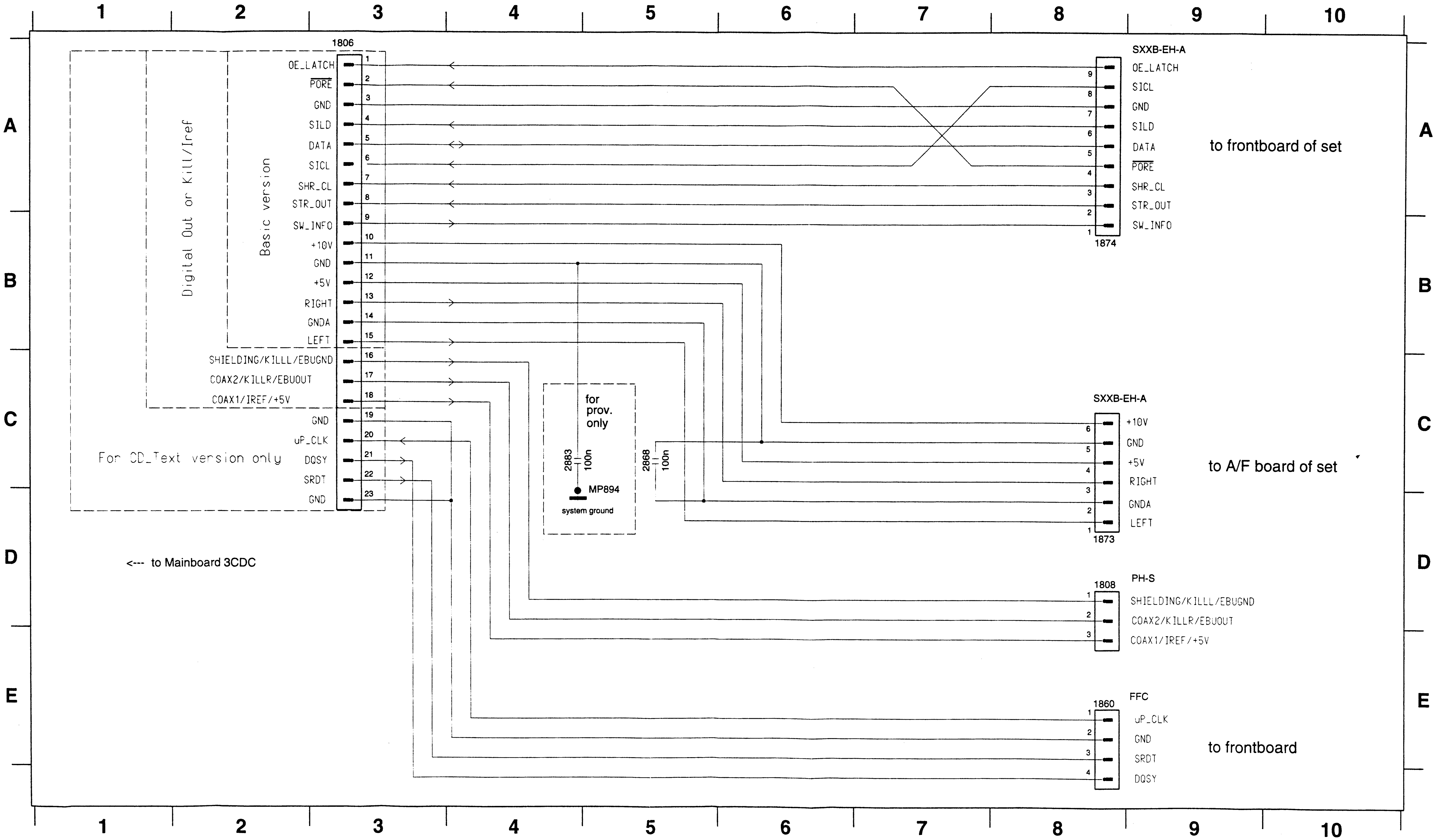

CD MECHANISM
PHOTODIODE & HF AMPLIFIER - LOADER CONTROL PCB
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLEDGE MOTOR
TURNTABLE MOTOR
LASER POWER CONTROL
PHOTO DIODES
D1 D4 D5 D2 D3
FOCB+
FOCB-
RADB+
RADB-
SLEDGEB+
SLEDGEB-
TTM-
TTM+
7806
TDA7073A
7807
TDA7073A
+5V
7808-7809
D1-D5
7801
HF AMPLIFIER 74HCU04D
D2-D4
7800
SERVO - DECODER
CD7
SAA7378
FO
RA
SL
MOT1
MOT2
LD ON
D1 D2 D3 D4 R1,R2
HF IN
PORE
SILD
SCL
SDA
VCC
2,19,30,47,59
+4V
7874
7875
+5V
7851
DAC
TDA1311
BCK
WS
DATA
Vout R
Vout L
CD RIGHT
CD LEFT
1805
+10V
+5V
PORE
SILD
SCL
DATA
INNER SWITCH
SWITCH INFO
1880
CD POS. SWITCH
1881
TRAY SWITCH
1882
CARROUSEL SWITCH
7873
SHIFT REGISTER
HEF4094BT
O4
O6
O5
O7
DATA
EN1
STB
SHR_CL
VCC
OO
O1
O2
O3
+10V
5V1
OE_LATCH
STR-OUTP
SHR_CL
SWITCH INFO
7871
TDA7073A
CARROUSEL MOTOR
TRAY MOTOR
FLEX-FOIL
1806
CONNECTOR PCB
MODULE INTERFACE

NOT ON ALL VERSIONS

For sets without this board flexfoil 8002 is connected directly.

Circuit diagram Connector Board

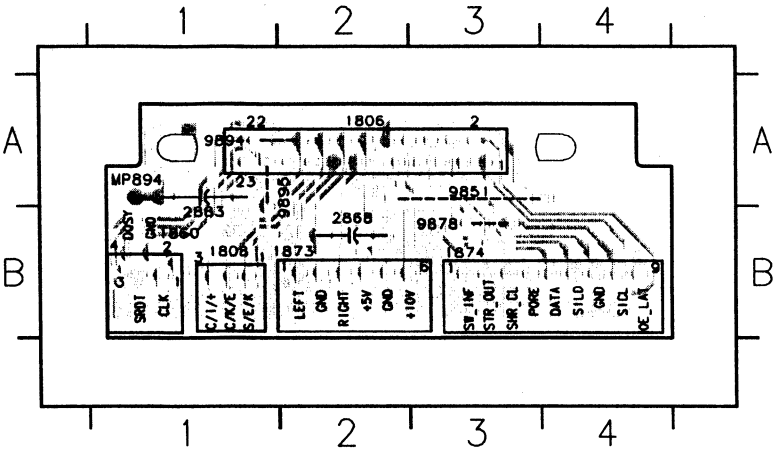
1806	A3	1860	E8	1874	B8	2883	C4
1808	D8	1873	D8	2868	C5		


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
1806
OE_LATCH
PORE
GND
SILD
DATA
SICL
SHR_CL
STR_OUT
SW_INFO
+10V
GND
+5V
RIGHT
GNDA
LEFT
SHIELDING/KILLL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
GND
uP_CLK
DQSY
SRDT
GND
Basic version
Digital Out or Kill/Iref
For CD_Text version only
<--- to Mainboard 3CDC
SXXB-EH-A
OE_LATCH
SICL
GND
SILD
DATA
PORE
SHR_CL
STR_OUT
SW_INFO
1874
to frontboard of set
for prov. only
2883
100n
2868
100n
MP894
system ground
SXXB-EH-A
+10V
GND
+5V
RIGHT
GNDA
LEFT
1873
to A/F board of set
1808
PH-S
SHIELDING/KILLL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
1860
FFC
uP_CLK
GND
SRDT
DQSY
to frontboard

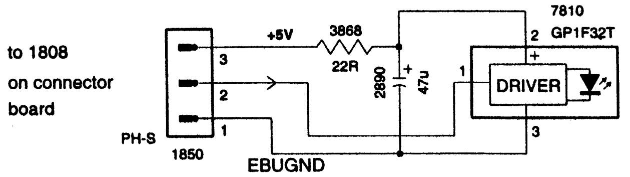
NOT ON ALL VERSIONS

Connector Board Copperside view

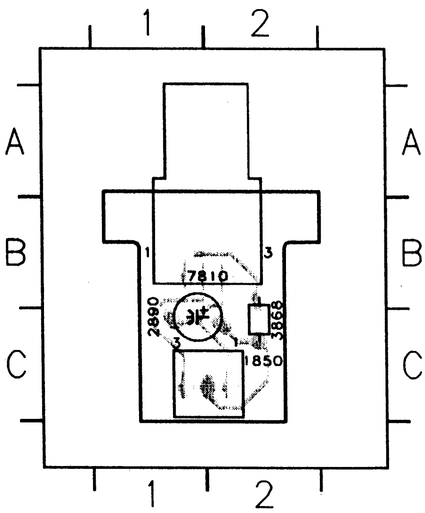
1806	A2	1873	B2	2883	B1	9894	A1
1808	B1	1874	B3	9851	A3	9895	A2
1860	B1	2868	B2	9878	B3	MP894	A1


1
2
3
4
A
B
22
1806
2
9894
MP894
23
9895
9851
2883
DOSY
GND
1860
2868
9878
4
2
3
1808
1873
1874
6
1
9
G
SRDT
CLK
C/I/+
C/K/E
S/E/K
LEFT
GND
RIGHT
+5V
GND
+10V
SW_INF
STR_OUT
SHR_CL
PORE
DATA
SILD
GND
SICL
OE_LAT

Circuit Diagram Optical out


to 1808
on connector
board
PH-S
1850
3
2
1
+5V
3868
22R
2890
47u
EBUGND
7810
GP1F32T
2
1
3
+
DRIVER

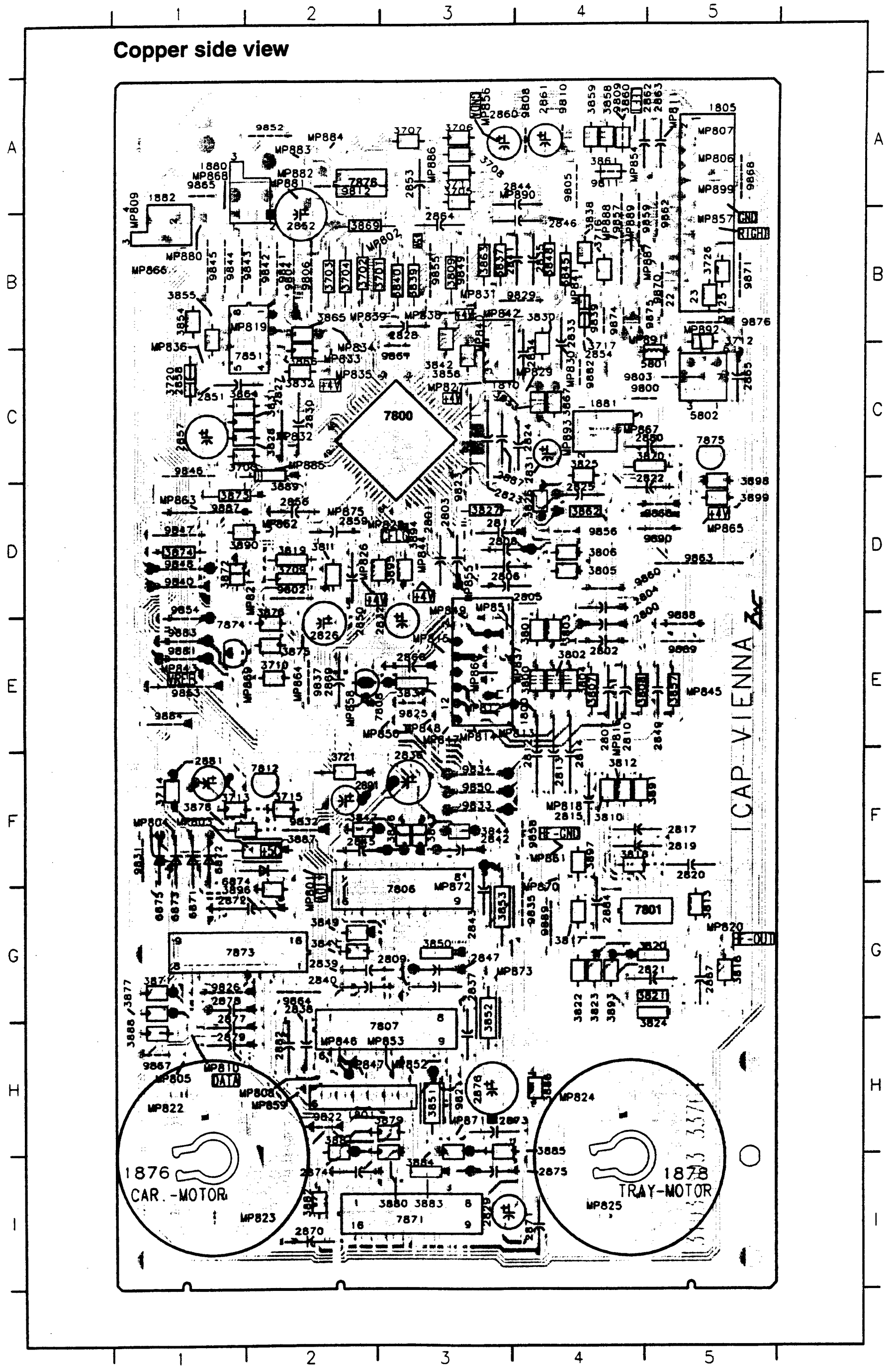
Component Layout Optical out


1
2
A
B
C
1
3
7810
2890
3
1
3868
1850

1850	C2
2890	C1
3868	C2
7810	B1

NOT ON ALL VERSIONS

Copper side view



CS 53 019

1800	E3
1801	H2
1805	B5
1810	C3
1876	I1
1878	I4
1880	B2
1881	C4
1882	B1
2800	D4
2801	D3
2802	E4
2803	D3
2804	D4
2805	D3
2806	D3
2807	E4
2808	D3
2809	G3
2810	E4
2811	D3
2812	F4
2813	F4
2814	F4
2815	F4
2817	F4
2819	F4
2820	F5
2821	G5
2822	D5
2823	C3
2824	C4
2825	D4
2826	D2
2827	C2
2828	B3
2829	I3
2830	C2
2831	C4
2832	E3
2833	B4
2834	C3
2835	B4
2836	F3
2837	H3
2838	H2
2839	G2
2840	G2
2841	B3
2842	F3
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2844	B4
2845	F2
2846	B4
2847	G3
2849	E5
2850	D2
2851	C1
2852	A2
2853	A3
2854	B4
2856	D2
2857	C1
2858	C1
2859	D2
2860	A3
2861	A4
2862	A4
2863	A5
2864	B3
2865	C5
2866	E3
2867	G5
2869	E2
2870	I2
2871	I4
2872	G2
2873	H3
2874	I2
2875	I3
2876	H3
2877	G1
2878	G1
2879	H1
2880	C5
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2882	H2
2884	G4
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3700	C1
3701	B3
3702	B2
3703	B2
3704	B2
3705	A3
3706	A3
3707	A3
3708	A3
3709	D2
3710	E2
3711	A3
3712	B5
3713	F1
3714	F1
3715	F2
3716	B4
3717	B4
3720	C1
3725	B5
3726	B5
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3801	E4
3802	E4
3803	E4
3804	E4
3805	D4
3806	D4
3807	E4
3808	E4
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3818	F4
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3825	C4
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3828	C1
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3831	C1
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3856	C3
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3862	D4
3863	B3
3864	C1
3865	B2
3866	C2
3867	C4
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3898	D5
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6872	F1
6873	F1
6874	F2
6875	F1
7800	C2
7801	G4
7806	G3
7807	H3
7808	E2
7812	F2
7851	B2
7871	I3
7873	G1
7874	E1
7875	C5
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9803	C5
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9805	A4
9806	B2
9808	A4
9809	A4
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9812	A2
9821	H3
9822	H2
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9842	B2
9843	B2
9844	B1
9845	B1
9846	C1
9847	D1
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9854	D1
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9856	D4
9857	B4
9858	F4
9859	B4
9860	D4
9861	B3
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9863	D5
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9874	B4
9875	B4
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9881	E1
9882	C4
9883	E1
9884	E1
9887	D1
9888	E5
9889	G4
9890	D5

1800	E3
1801	H2
1805	B5
1810	C3
1876	I1
1878	I4
1880	B2
1881	C4
1882	B1
2800	D4
2801	D3
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2822	D5
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2824	C4
2825	D4
2826	D2
2827	C2
2828	B3
2829	I3
2830	C2
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2838	H2
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2840	G2
2841	B3
2842	F3
2843	G3
2844	B4
2845	F2
2846	B4
2847	G3
2849	E5
2850	D2
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2852	A2
2853	A3
2854	B4
2856	D2
2857	C1
2858	C1
2859	D2
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2863	A5
2864	B3
2865	C5
2866	E3
2867	G5
2869	E2
2870	I2
2871	I4
2872	G2
2873	H3
2874	I2
2875	I3
2876	H3
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2879	H1
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3712	B5
3713	F1
3714	F1
3715	F2
3716	B4
3717	B4
3720	C1
3725	B5
3726	B5
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3801	E4
3802	E4
3803	E4
3804	E4
3805	D4
3806	D4
3807	E4
3808	E4
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3849	G2
3850	G3
3851	H3
3852	G3
3853	G3
3854	B1
3855	B1
3856	C3
3857	E5
3858	A4
3859	A4
3860	A4
3861	A4
3862	D4
3863	B3
3864	C1
3865	B2
3866	C2
3867	C4
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6871	F1
6872	F1
6873	F1
6874	F2
6875	F1
7800	C2
7801	G4
7806	G3
7807	H3
7808	E2
7812	F2
7851	B2
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7873	G1
7874	E1
7875	C5
9800	C4
9802	D2
9803	C5
9804	B2
9805	A4
9806	B2
9808	A4
9809	A4
9810	A4
9811	A4
9812	A2
9821	H3
9822	H2
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9844	B1
9845	B1
9846	C1
9847	D1
9848	D1
9849	B3
9850	F3
9852	A2
9853	E1
9854	D1
9855	B3
9856	D4
9857	B4
9858	F4
9859	B4
9860	D4
9861	B3
9862	B5
9863	D5
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9866	D5
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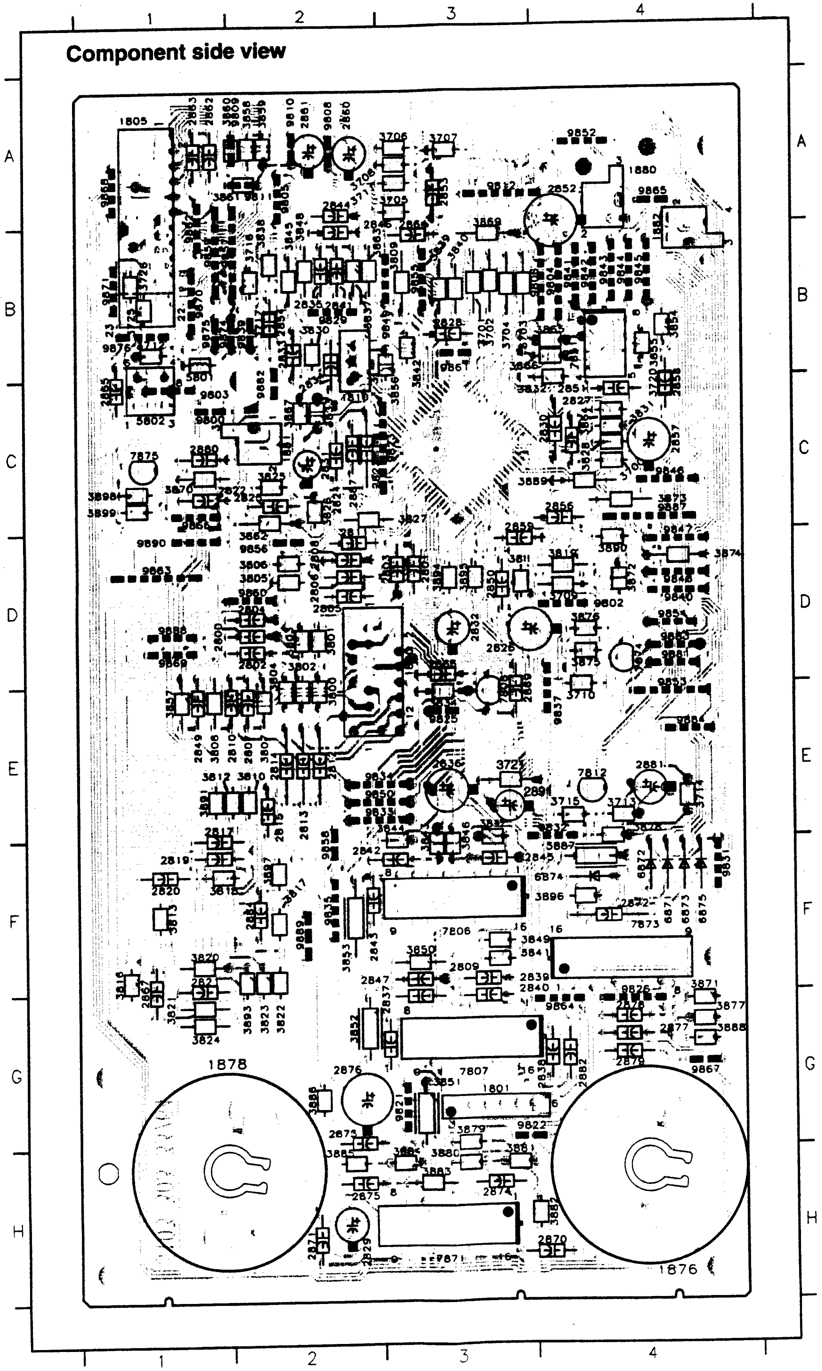
9868	A5
9869	E5
9870	B5
9871	B5
9874	B4
9875	B4
9876	B5
9881	E1
9882	C4
9883	E1
9884	E1
9887	D1
9888	E5
9889	G4
9890	D5

Component side view



1800	D3
1801	G3
1805	A1
1810	B2
1876	H4
1878	H1
1880	B4
1881	C2
1882	B4
2800	D2
2801	D3
2802	D2
2803	D3
2804	D2
2805	D2
2806	D2
2807	E2
2808	D2
2809	F3
2810	E2
2811	D2
2812	E2
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2819	F1
2820	F1
2821	G1
2822	C1
2823	C2
2824	C2
2825	C2
2826	D3
2827	C4
2828	B3
2829	H2
2830	C4
2831	C2
2832	D3
2833	B2
2834	B2
2835	B2
2836	E3
2837	G2
2838	G4
2839	F3
2840	F3
2841	B2
2842	F3
2843	F2
2844	B2
2845	F3
2846	B2
2847	F3
2849	E1
2850	D3
2851	C4
2852	A4
2853	A3
2854	B2
2856	C4
2857	C4
2858	C4
2859	C3
2860	A2
2861	A2
2862	A1
2863	A1
2864	B3
2865	C1
2866	E3
2867	F1
2869	E3
2870	H4
2871	H2
2872	F4
2873	G2
2874	H3
2875	H2
2876	G3
2877	G4
2878	G4
2879	G4
2880	C1
2881	E4
2882	G4
2884	F2
2887	C2
3700	C4
3701	B3
3702	B3
3703	B3
3704	B3
3705	A3
3706	A3
3707	A3
3708	A3
3709	D4
3710	E4
3711	A3
3712	B1
3713	E4
3714	E4
3715	E4
3716	B2
3717	B2
3720	C4
3725	B1
3726	B1
3800	E2
3801	D2
3802	E2
3803	D2
3804	E2
3805	D2
3806	D2
3807	E2
3808	E1
3809	B3
3810	E2
3811	D3
3812	E2
3813	F1
3816	F1
3817	F2
3818	F1
3819	D4
3820	F1
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3825	C2
3826	C2
3827	C2
3828	C4
3830	B2
3831	C4
3832	C4
3833	C2
3834	E3
3837	B2
3838	B2
3839	B3
3840	B3
3841	F3
3842	B3
3843	F3
3844	F3
3845	B2
3846	F3
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3851	G3
3852	G2
3853	F2
3854	B4
3855	B4
3856	B3
3857	E1
3858	A2
3859	A2
3860	A2
3861	A2
3862	C2
3863	B2
3864	C4
3865	B4
3866	B4
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3870	C1
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3874	D4
3875	D4
3876	D4
3877	G4
3878	E4
3879	G3
3880	H3
3881	H3
3882	H4
3883	H3
3884	H3
3885	H2
3886	G2
3887	F4
3888	G4
3889	C4
3890	D4
3891	E1
3893	F2
3894	D3
3895	D3
3896	F4
3897	F2
3898	C1
3899	C1
5801	B1
5802	C1
6871	F4
6872	F4
6873	F4
6874	F4
6875	F4
7806	F3
7807	G3
7808	E3
7812	E4
7851	B4
7871	H3
7873	F4
7874	D4
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9800	C1
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9803	C1
9804	B4
9805	A2
9806	B4
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9809	A2
9810	A2
9811	A2
9812	A3
9821	G3
9822	G3
9823	C3
9825	E3
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9829	B2
9831	F4
9832	E4
9833	E2
9834	E2
9835	F2
9837	E4
9839	B2
9840	D4
9841	B4
9842	B4
9843	B4
9844	B4
9845	B4
9846	C4
9847	D4
9848	D4
9849	B3
9850	E2
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9854	D4
9855	B3
9856	D2
9857	B2
9858	F2
9859	B1
9860	D2
9861	B3
9862	A1
9863	D1
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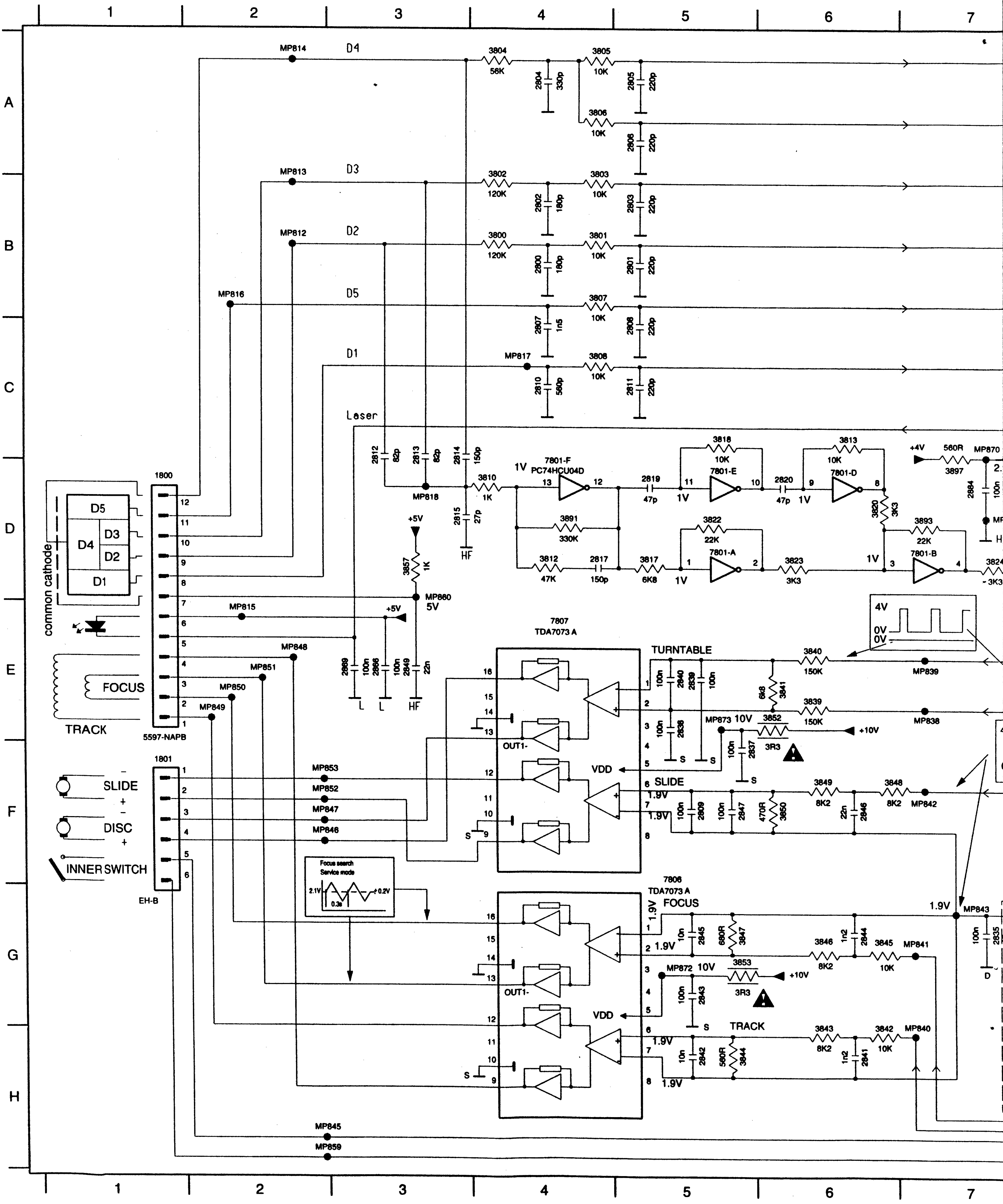
9866	C1
9867	G4
9868	A1
9869	D1
9870	B1
9871	B1
9874	B2
9875	B1
9876	B1
9881	D4
9882	C2
9883	D4
9884	E4
9887	C4
9888	D1
9889	F2
9890	D1

Circuit Diagram Main Board part1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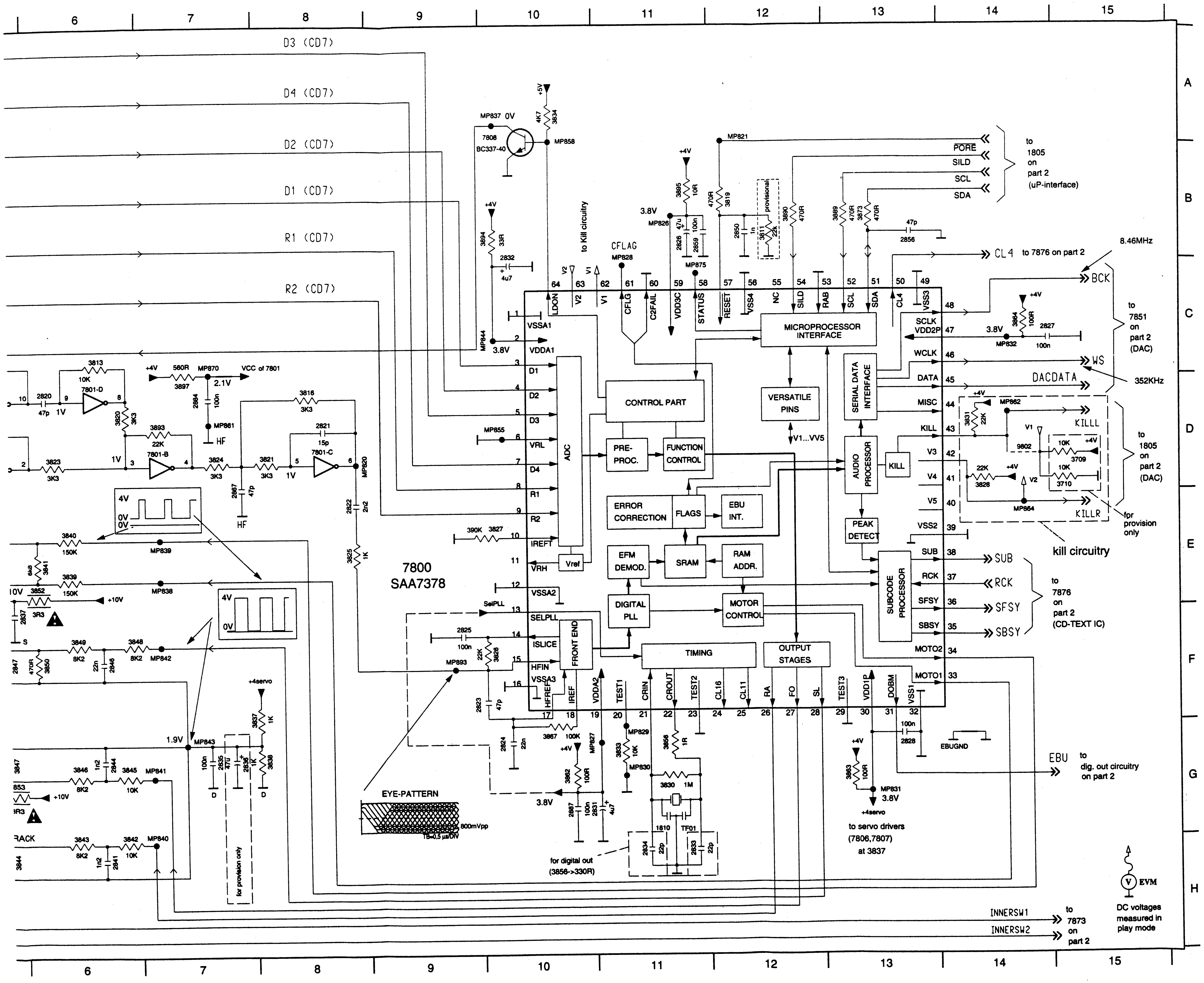
A B C D E F G H
MP814 D4
3804 56K
2804 330p
3805 10K
2805 220p
3806 10K
2806 220p
MP813 D3
3802 120K
2802 180p
3803 10K
2803 220p
MP812 D2
3800 120K
2800 180p
3801 10K
2801 220p
MP816 D5
2807 1n5
3807 10K
2808 220p
D1
MP817
2810 560p
3808 10K
2811 220p
Laser
2812 82p
2813 82p
2814 150p
MP818
2815 27p
HF
3810 1K
1V
7801-F PC74HCU04D
13 12
3891 330K
3812 47K
2817 150p
3817 6K8
2819 47p
3818 10K
7801-E
11 10
1V
7801-A
1 2
3822 22K
3823 3K3
2820 47p
3813 10K
7801-D
9 8
3820 3K3
3893 22K
7801-B
3 4
3824 - 3K3
+4V 560R 3897 MP870
2884 100n
1800
D5 D3 D4 D2 D1
common cathode
12 11 10 9 8 7 6 5 4 3 2 1
FOCUS
TRACK
5597-NAPB
MP815
+5V
3857 1K
MP860 5V
+5V
2869 100n
2866 100n
2849 22n
L L HF
MP848
MP851
MP850
MP849
7807 TDA7073 A
16 15 14 13 OUT1- 12 11 10 S 9
TURNTABLE
1 2 3 4 5 6 7 8
2840 100n
2839 100n
2838 100n
S S
VDD
3840 150K
MP839
6K8 3841
3839 150K
MP838
MP873 10V
3852 3R3
+10V
2837 100n
S
4V 0V 0V
1801
SLIDE
DISC
INNER SWITCH
EH-B
1 2 3 4 5 6
MP853 MP852 MP847 MP846
SLIDE
1.9V
1.9V
2809 100n
2847 100n
470R 3850
3849 8K2
2846 22n
3848 8K2
MP842
Focus search Service mode
2.1V 0.3s 0.2V
7806 TDA7073 A
FOCUS
1.9V
16 15 14 13 OUT1- 12 11 10 S 9
2845 10n
680R 3847
1.9V
3846 8K2
2844 1n2
3845 10K
MP841
1.9V MP843
2835 100n
D
MP872 10V
3853 3R3
+10V
2843 100n
S
VDD
TRACK
1.9V
2842 10n
560R 3844
3843 8K2
2841 1n2
3842 10K
MP840
1.9V
MP845
MP859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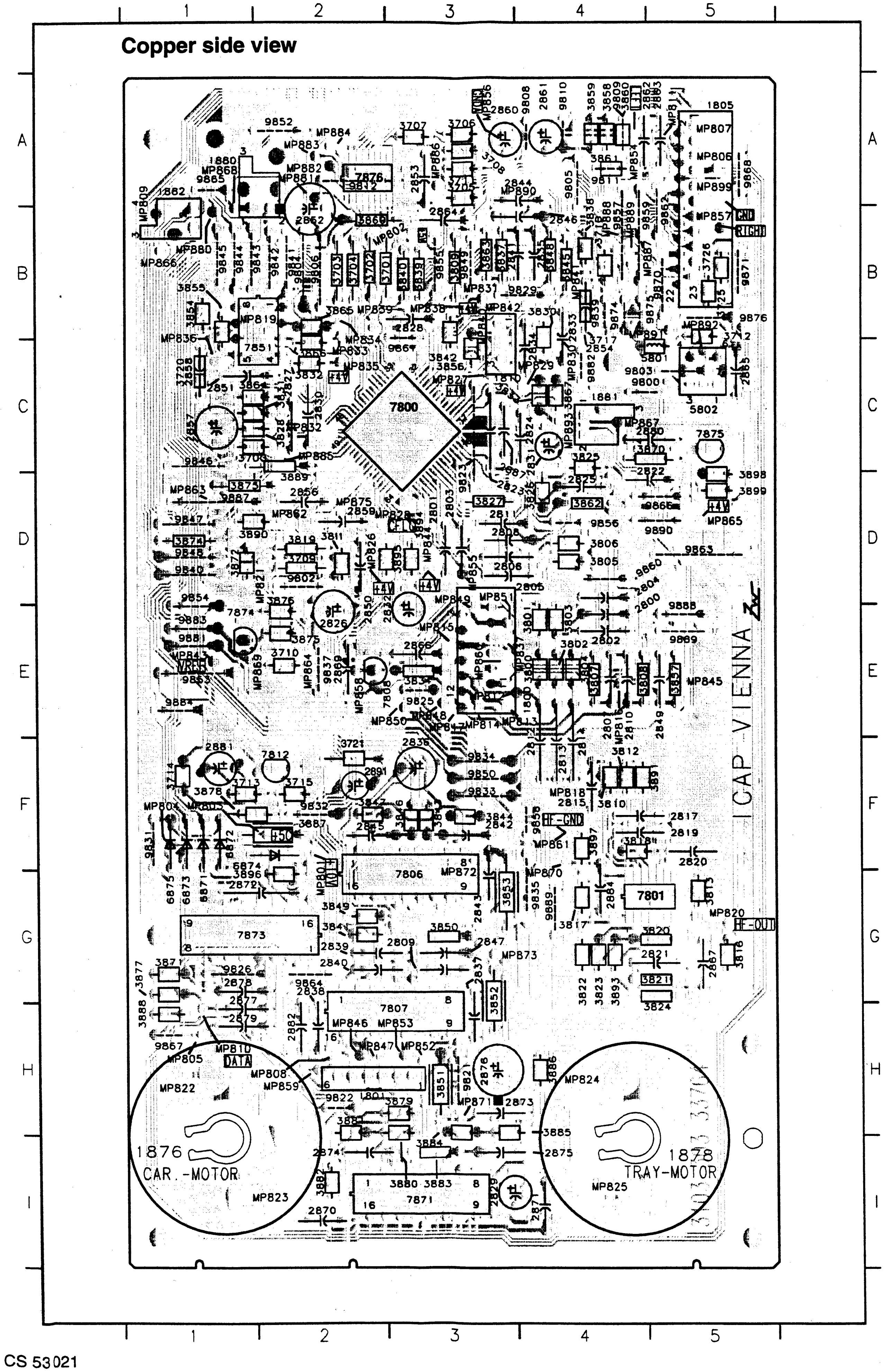
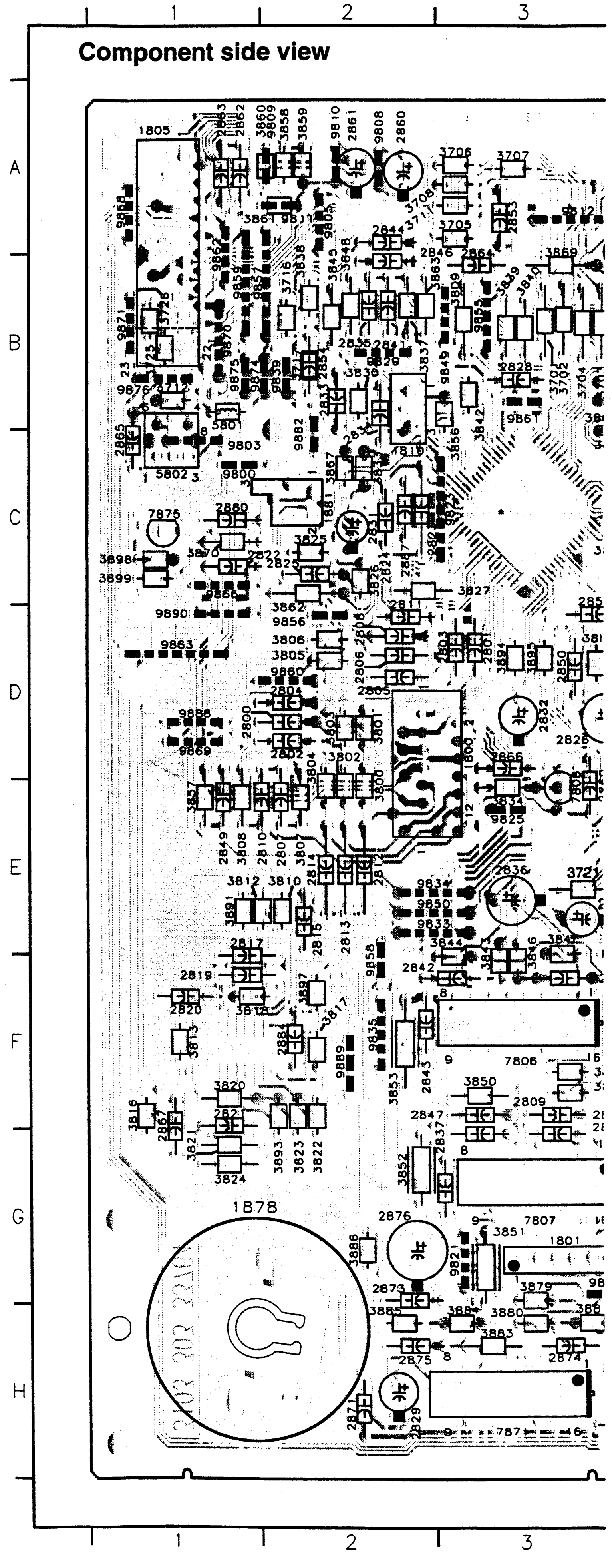
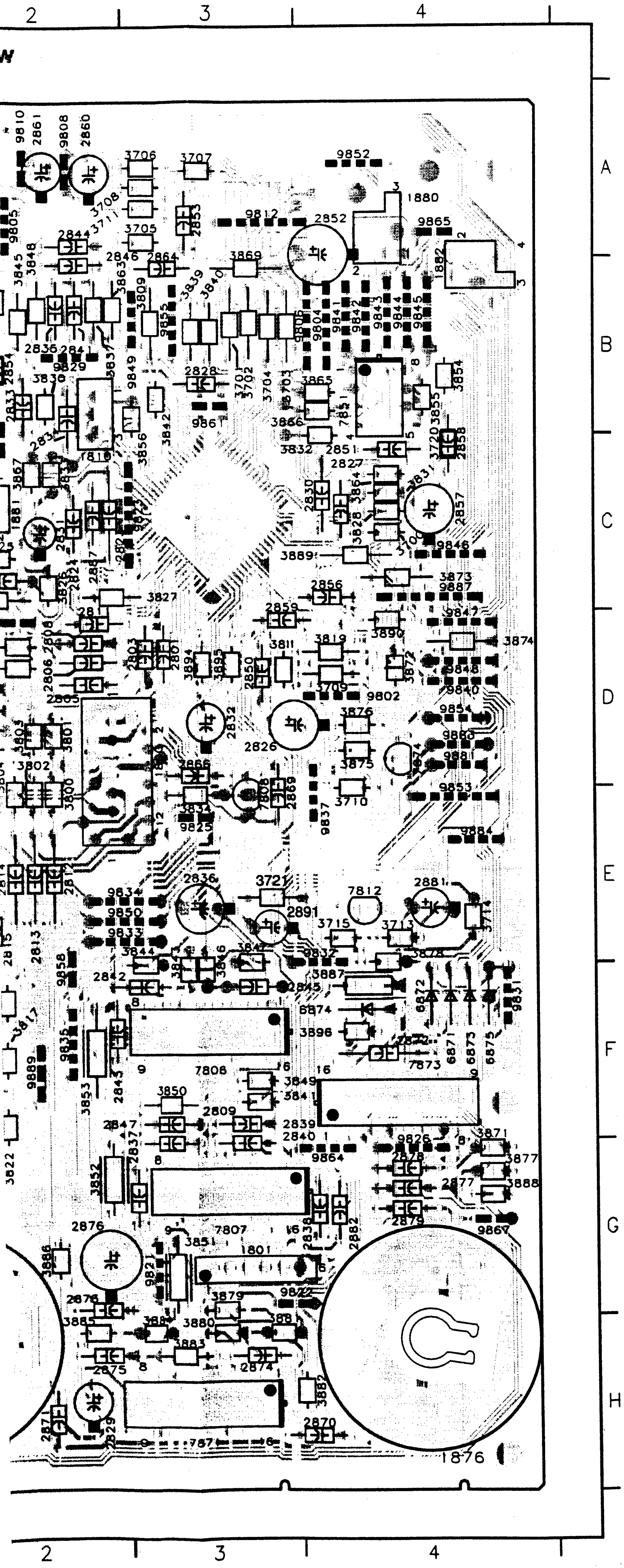
D4 (CD7)
D2 (CD7)
D1 (CD7)
R1 (CD7)
R2 (CD7)
7800
SAA7378
VSSA1
VDDA1
D1
D2
D3
VRL
D4
R1
R2
IREFT
VRH
VSSA2
SELPLL
ISLICE
HFIN
VSSA3
HFREF
IREF
VDDA2
TEST1
CRIN
CROUT
TEST2
CL16
CL11
RA
FO
SL
TEST3
VDD1P
DOBM
VSS1
LDON
V2
V1
CFLG
C2FAIL
VDD3C
STATUS
RESET
VSS4
NC
SILD
RAB
SCL
SDA
CL4
VSS3
SCLK
VDD2P
WCLK
DATA
MISC
KILL
V3
V4
V5
VSS2
SUB
RCK
SFSY
SBSY
MOTO2
MOTO1
ADC
Vref
CONTROL PART
PRE-PROC.
FUNCTION CONTROL
ERROR CORRECTION
FLAGS
EBU INT.
EFM DEMOD.
SRAM
RAM ADDR.
DIGITAL PLL
MOTOR CONTROL
FRONT END
TIMING
OUTPUT STAGES
MICROPROCESSOR INTERFACE
VERSATILE PINS
V1...V5
SERIAL DATA INTERFACE
AUDIO PROCESSOR
KILL
PEAK DETECT
SUBCODE PROCESSOR
PORE
SILD
SCL
SDA
to 1805 on part 2 (uP-interface)
CL4 to 7876 on part 2
8.46MHz
BCK
WS
DACDATA
352KHz
to 7851 on part 2 (DAC)
KILLL
KILLR
to 1805 on part 2 (DAC)
for provision only
kill circuitry
SUB
RCK
SFSY
SBSY
to 7876 on part 2 (CD-TEXT IC)
EBU
to dig. out circuitry on part 2
EBUGND
INNERSW1
INNERSW2
to 7873 on part 2
DC voltages measured in play mode
EVM
to servo drivers (7806,7807) at 3837
+4servo
MP831 3.8V
for digital out (3856->330R)
EYE-PATTERN
800mVpp
TB=0.5 µs/DIV
for provision only
to Kill circuitry
CFLAG
MP828
MP837 0V
7808 BC337-40
MP858
4K7 3834
+5V
+4V
3894 33R
2832 4u7
MP844
3.8V
MP826
3895 10R
2826 47u
2859 100n
MP875
MP821
3819 470R
2850 1n
3811 22K provisional
3890 470R
3889 470R
3873 470R
47p 2856
3864 100R
2827 100n
MP832
3831 22K
MP862
9802
3709 10K
3710 10K
3828 22K
MP864
3813 10K
7801-D
2820 47p
1V
+4V 560R 3897
MP870
2.1V
VCC of 7801
2884 100n
MP861
HF
3820 3K3
3893 22K
7801-B
3823 3K3
3824 3K3
2867 47p
3816 3K3
3821 3K3
2821 15p
7801-C
MP820
2822 2n2
3825 1K
4V
0V
3840 150K
MP839
3841 6k8
3839 150K
MP838
10V 3852 3R3
+10V
2837
3849 8K2
3848 8K2
2846 22n
3850 470R
2847
MP842
+4servo
3837 1K
1.9V
MP843
2835 100n
2836 470
3838 1K
3846 8K2
2844 1n2
3845 10K
MP841
3843 8K2
3842 10K
MP840
2841 1n2
3847
3844
RACK
MP855
390K 3827
SelPLL
2825 100n
3826 22K
MP893
2823 47p
2824 22n
3867 100K
MP827
3862 100R
2887 100n
2831 4u7
3833 10K
MP829
MP830
3856 1R
3830 1M
1810
TF01
2834 22p
2833 22p
3863 100R
100n 2828
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H

1800	D1
1801	F1
1810	G11
2800	B4
2801	B5
2802	B4
2803	B5
2804	A4
2805	A5
2806	A5
2807	C4
2808	C5
2809	F5
2810	C4
2811	C5
2812	C3
2813	C3
2814	C3
2815	D3
2817	D4
2819	D5
2820	D6
2821	D8
2822	E8
2823	F9
2824	G9
2825	F9
2826	B11
2827	C14
2828	G13
2831	G10
2832	B10
2833	H11
2834	H11
2835	G7
2836	G7
2837	F5
2838	E5
2839	E5
2840	E5
2841	H6
2842	H5
2843	G5
2844	G6
2845	G5
2846	F6
2847	F5
2849	E3
2850	B12
2856	B13
2859	B11
2866	E3
2867	D7
2869	E3
2884	D7
2887	G10
3709	D15
3710	D15
3800	B4
3801	B4
3802	A4
3803	A4
3804	A4
3805	A4
3806	A4
3807	B4
3808	C4
3810	D4
3811	B12
3812	D4
3813	C6
3816	D8
3817	D5
3818	C5
3819	B12
3820	D6
3821	D8
3822	D5
3823	D6
3824	D7
3825	E8
3826	F10
3827	E10
3828	D14
3830	G11
3831	D14
3833	G11
3834	B10
3837	F8
3838	G8
3839	E6
3840	E6
3841	E6
3842	G6
3843	G6
3844	H5
3845	G6
3846	G6
3847	G5
3848	F6
3849	F6
3850	F6
3852	E6
3853	G5
3856	G11
3857	D3
3862	G10
3863	G13
3864	C14
3867	G10
3873	B13
3889	B13
3890	B12
3891	D4
3893	D7
3894	B10
3895	B11
3897	D7
7800	E9
7801-A	D5
7801-B	D7
7801-C	D8
7801-D	D6
7801-E	D5
7801-F	D4
7806	G5
7807	E4
7808	B10
9802	D14
MP812	B2
MP813	A2
MP814	A2
MP815	E2
MP816	B2
MP817	C4
MP818	D3
MP820	D8
MP821	B12
MP826	B11
MP827	G10
MP828	B11
MP829	G11
MP830	G11
MP831	G13
MP832	C14
MP837	B10
MP838	E6
MP839	E6
MP840	G7
MP841	G7
MP842	F7
MP843	G7
MP844	C10
MP845	H3
MP846	F2
MP847	F2
MP848	E2
MP849	E2
MP850	E2
MP851	E2
MP852	F2
MP853	F2
MP855	D10
MP858	B10
MP859	H3
MP860	D3
MP861	D7
MP862	D14
MP864	E14
MP870	C7
MP872	G5
MP873	E5
MP875	C11
MP893	F9



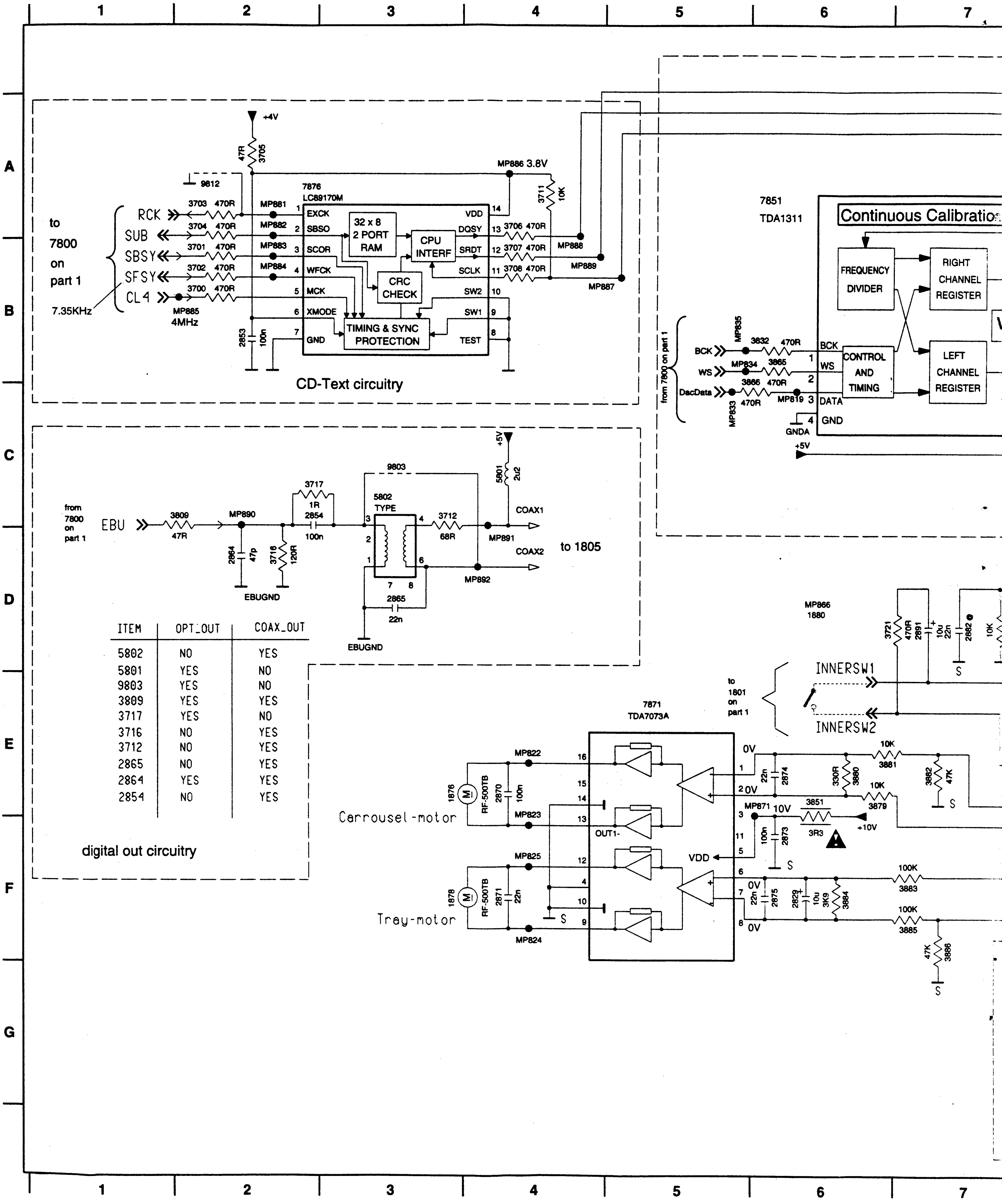
1800	E3
1801	H2
1805	B5
1810	C3
1876	I1
1878	I4
1880	B2
1881	C4
1882	B1
2800	D4
2801	D3
2802	E4
2803	D3
2804	D4
2805	D3
2806	D3
2807	E4
2808	D3
2809	G3
2810	E4
2811	D3
2812	F4
2813	F4
2814	F4
2815	F4
2817	F4
2819	F4
2820	F5
2821	G5
2822	D5
2823	C3
2824	C4
2825	D4
2826	D2
2827	C2
2828	B3
2829	I3
2830	C2
2831	C4
2832	E3
2833	B4
2834	C3
2835	B4
2836	F3
2837	H3
2838	H2
2839	G2
2840	G2
2841	B3
2842	F3
2843	G3
2844	B4
2845	F2
2846	B4
2847	G3
2849	E5
2850	D2
2851	C1
2852	A2
2853	A3
2854	B4
2856	D2
2857	C1
2858	C1
2859	D2
2860	A3
2861	A4
2862	A4
2863	A5
2864	B3
2865	C5
2866	E3
2867	G5
2869	E2
2870	I2
2871	I4
2872	G2
2873	H3
2874	I2
2875	I3
2876	H3
2877	G1
2878	G1
2879	H1
2880	C5
2881	F1
2882	H2
2884	G4
2887	C3
3700	C1
3701	B3
3702	B2
3703	B2
3704	B2
3705	A3
3706	A3
3707	A3
3708	A3
3709	D2
3710	E2
3711	A3
3712	B5
3713	F1
3714	F1
3715	F2
3716	B4
3717	B4
3720	C1
3725	B5
3726	B5
3800	E4
3801	E4
3802	E4
3803	E4
3804	E4
3805	D4
3806	D4
3807	E4
3808	E4
3809	B3
3810	F4
3811	D2
3812	F4
3813	G5
3816	G5
3817	G4
3818	F4
3819	D2
3820	G5
3821	G5
3822	G4
3823	G4
3824	G5
3825	C4
3826	D4
3827	D3
3828	C1
3830	B4
3831	C1
3832	C2
3833	C4
3834	E3
3837	B3
3838	B4
3839	B3
3840	B3
3841	G2
3842	B3
3843	F3
3844	F3
3845	B4
3846	F3
3847	F2
3848	B4
3849	G2
3850	G3
3851	H3
3852	G3
3853	G3
3854	B1
3855	B1
3856	C3
3857	E5
3858	A4
3859	A4
3860	A4
3861	A4
3862	D4
3863	B3
3864	C1
3865	B2
3866	C2
3867	C4
3869	B2
3870	C5
3871	G1
3872	D1
3873	D1
3874	D1
3875	E2
3876	E2
3877	G1
3878	F2
3879	H3
3880	H3
3881	H2
3882	I2
3883	I3
3884	H3
3885	H3
3886	H4
3887	F2
3888	H1
3889	C2
3890	D1
3891	F4
3893	G4
3894	D3
3895	D3
3896	G2
3897	F4
3898	D5
3899	D5
5801	B5
5802	C5
6871	F1
6872	F1
6873	F1
6874	F2
6875	F1
7800	C2
7801	G4
7806	G3
7807	H3
7808	E2
7812	F2
7851	B2
7871	I3
7873	G1
7874	E1
7875	C5
9800	C4
9802	D2
9803	C5
9804	B2
9805	A4
9806	B2
9808	A4
9809	A4
9810	A4
9811	A4
9812	A2
9821	H3
9822	H2
9823	C3
9825	E3
9826	G1
9829	B4
9831	F1
9832	F2
9833	F3
9834	F3
9835	G4
9837	E2
9839	B4
9840	D1
9841	B2
9842	B2
9843	B2
9844	B1
9845	B1
9846	C1
9847	D1
9848	D1
9849	B3
9850	F3
9852	A2
9853	E1
9854	D1
9855	B3
9856	D4
9857	B4
9858	F4
9859	B4
9860	D4
9861	B3
9862	B5
9863	D5
9864	G2
9865	A1
9866	D5
9867	H1
9868	A5
9869	E5
9870	B5
9871	B5
9874	B4
9875	B4
9876	B5
9881	E1
9882	C4
9883	E1
9884	E1
9887	D1
9888	E5
9889	G4
9890	D5





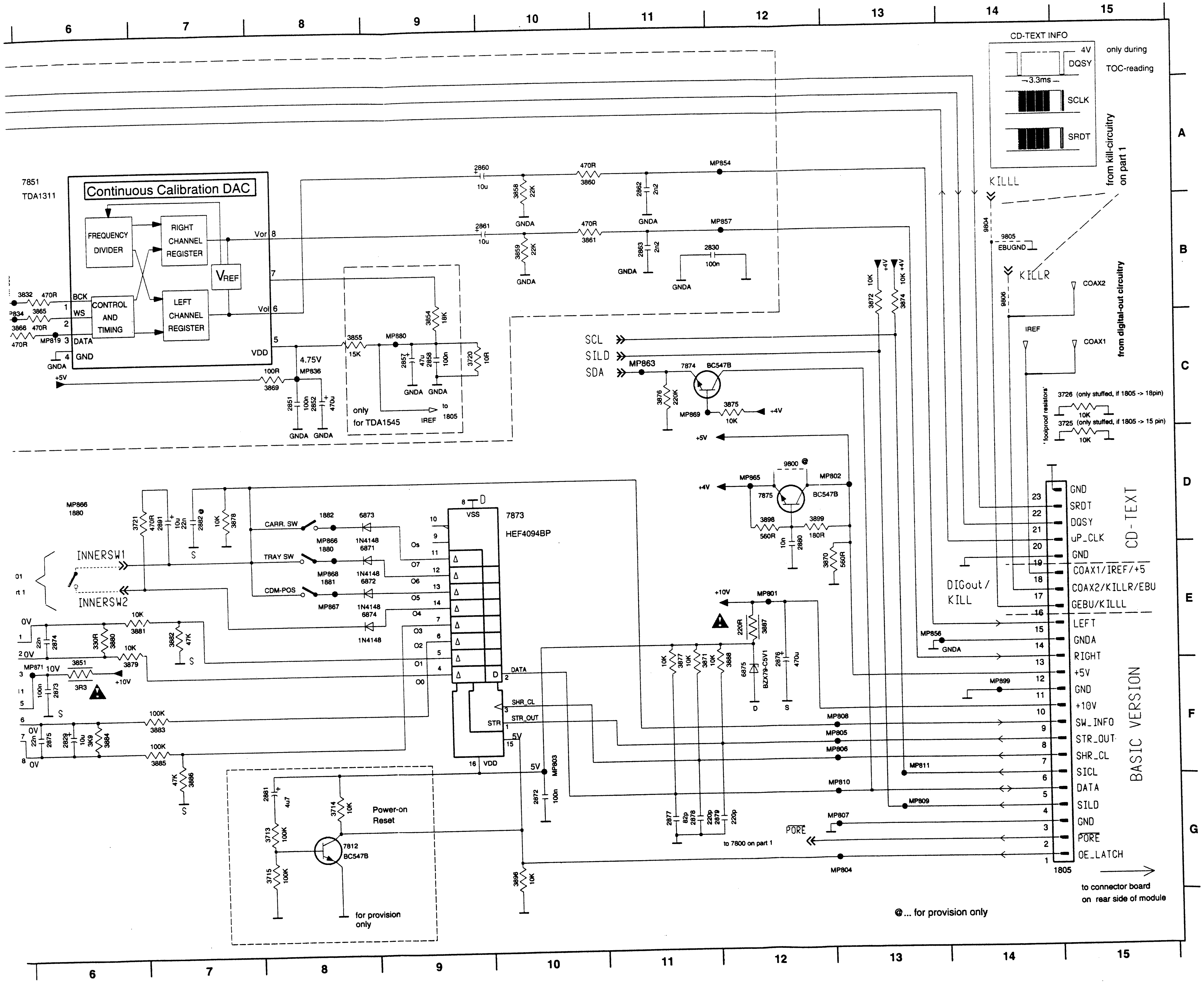
1800	D3	2869	E3	3841	F3	9800	C1
1801	G3	2870	H4	3842	B3	9802	D4
1805	A1	2871	H2	3843	F3	9803	C1
1810	B2	2872	F4	3844	F3	9804	B4
1876	H4	2873	G2	3845	B2	9805	A2
1878	H1	2874	H3	3846	F3	9806	B4
1880	B4	2875	H2	3847	E3	9808	A2
1881	C2	2876	G3	3848	B2	9809	A2
1882	B4	2877	G4	3849	F3	9810	A2
2800	D2	2878	G4	3850	F3	9811	A2
2801	D3	2879	G4	3851	G3	9812	A3
2802	D2	2880	C1	3852	G2	9821	G3
2803	D3	2881	E4	3853	F2	9822	G3
2804	D2	2882	G4	3854	B4	9823	C3
2805	D2	2884	F2	3855	B4	9825	E3
2806	D2	2887	C2	3856	B3	9826	G4
2807	E2	3700	C4	3857	E1	9829	B2
2808	D2	3701	B3	3858	A2	9831	F4
2809	F3	3702	B3	3859	A2	9832	E4
2810	E2	3703	B3	3860	A2	9833	E2
2811	D2	3704	B3	3861	A2	9834	E2
2812	E2	3705	A3	3862	C2	9835	F2
2813	E2	3706	A3	3863	B2	9837	E4
2814	E2	3707	A3	3864	C4	9839	B2
2815	E2	3708	A3	3865	B4	9840	D4
2817	F1	3709	D4	3866	B4	9841	B4
2819	F1	3710	E4	3867	C2	9842	B4
2820	F1	3711	A3	3869	B3	9843	B4
2821	G1	3712	B1	3870	C1	9844	B4
2822	C1	3713	E4	3871	G4	9845	B4
2823	C2	3714	E4	3872	D4	9846	C4
2824	C2	3715	E4	3873	C4	9847	D4
2825	C2	3716	B2	3874	D4	9848	D4
2826	D3	3717	B2	3875	D4	9849	B3
2827	C4	3720	C4	3876	D4	9850	E2
2828	B3	3725	B1	3877	G4	9852	A4
2829	H2	3726	B1	3878	E4	9853	E4
2830	C4	3800	E2	3879	G3	9854	D4
2831	C2	3801	D2	3880	H3	9855	B3
2832	D3	3802	E2	3881	H3	9856	D2
2833	B2	3803	D2	3882	H4	9857	B2
2834	B2	3804	E2	3883	H3	9858	F2
2835	B2	3805	D2	3884	H3	9859	B1
2836	E3	3806	D2	3885	H2	9860	D2
2837	G2	3807	E2	3886	G2	9861	B3
2838	G4	3808	E1	3887	F4	9862	A1
2839	F3	3809	B3	3888	G4	9863	D1
2840	F3	3810	E2	3889	C4	9864	G4
2841	B2	3811	D3	3890	D4	9865	A4
2842	F3	3812	E2	3891	E1	9866	C1
2843	F2	3813	F1	3893	F2	9867	G4
2844	B2	3816	F1	3894	D3	9868	A1
2845	F3	3817	F2	3895	D3	9869	D1
2846	B2	3818	F1	3896	F4	9870	B1
2847	F3	3819	D4	3897	F2	9871	B1
2849	E1	3820	F1	3898	C1	9874	B2
2850	D3	3821	G1	3899	C1	9875	B1
2851	C4	3822	F2	5801	B1	9876	B1
2852	A4	3823	F2	5802	C1	9881	D4
2853	A3	3824	G1	6871	F4	9882	C2
2854	B2	3825	C2	6872	F4	9883	D4
2856	C4	3826	C2	6873	F4	9884	E4
2857	C4	3827	C2	6874	F4	9887	C4
2858	C4	3828	C4	6875	F4	9888	D1
2859	C3	3830	B2	7806	F3	9889	F2
2860	A2	3831	C4	7807	G3	9890	D1
2861	A2	3832	C4	7808	E3		
2862	A1	3833	C2	7812	E4		
2863	A1	3834	E3	7851	B4		
2864	B3	3837	B2	7871	H3		
2865	C1	3838	B2	7873	F4		
2866	E3	3839	B3	7874	D4		
2867	F1	3840	B3	7875	C1		

Circuit Diagram Main Board part2



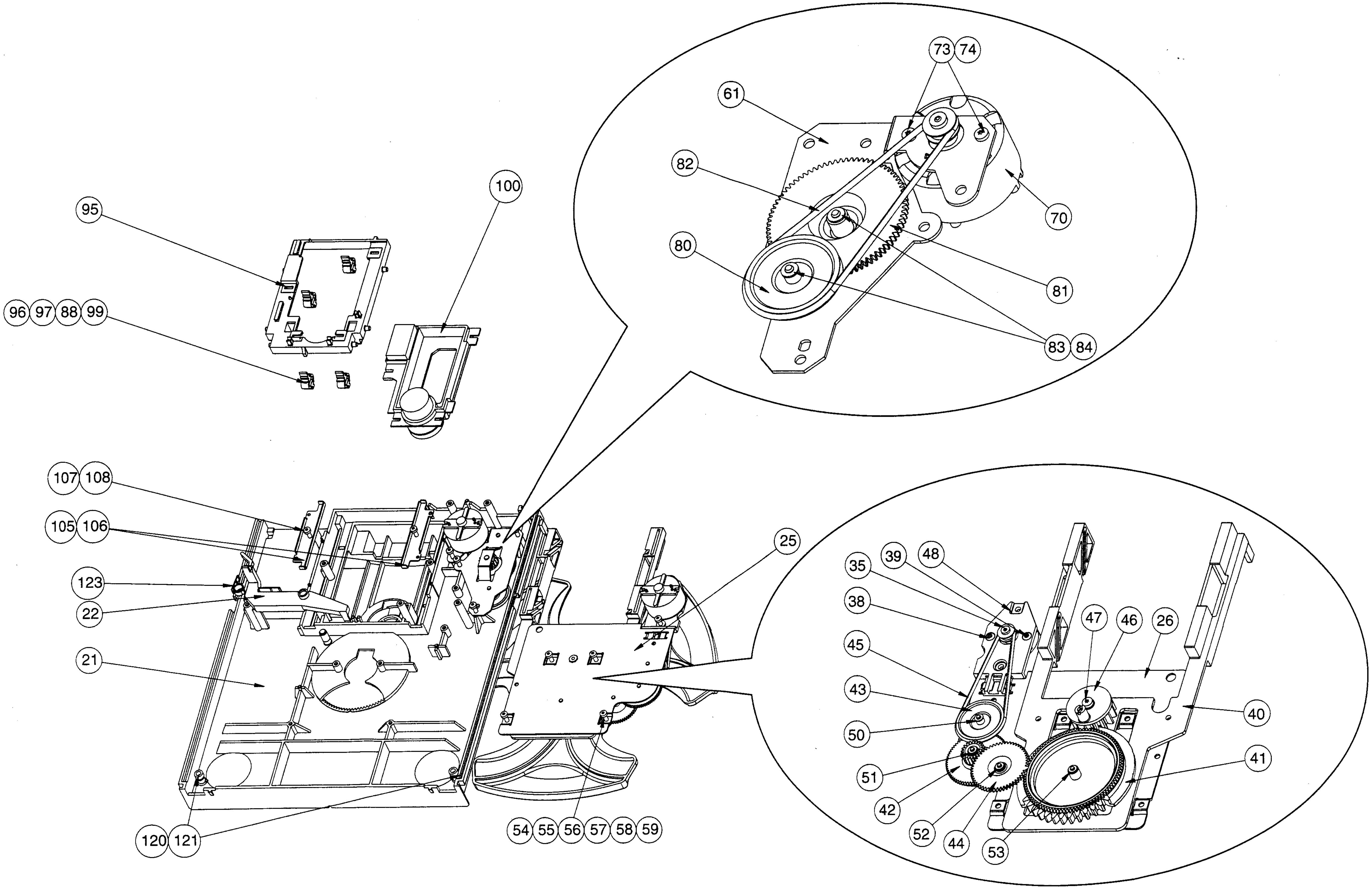
1
2
3
4
5
6
7
A
B
C
D
E
F
G
+4V
47R 3705
9812
7876 LC89170M
MP886 3.8V
3711 10K
to 7800 on part 1
RCK
SUB
SBSY
SFSY
CL4
7.35KHz
3703 470R
3704 470R
3701 470R
3702 470R
3700 470R
MP885 4MHz
MP881
MP882
MP883
MP884
EXCK
SBSO
SCOR
WFCK
MCK
XMODE
GND
32 x 8 2 PORT RAM
CPU INTERF
CRC CHECK
TIMING & SYNC PROTECTION
VDD
DQSY
SRDT
SCLK
SW2
SW1
TEST
3706 470R
3707 470R
3708 470R
MP888
MP889
MP887
2853 100n
CD-Text circuitry
7851 TDA1311
Continuous Calibratio
FREQUENCY DIVIDER
RIGHT CHANNEL REGISTER
LEFT CHANNEL REGISTER
CONTROL AND TIMING
from 7800 on part 1
BCK
WS
DacData
MP835
MP834
MP833
3632 470R
3865
3866 470R
470R
MP819
BCK
WS
DATA
GND
GNDA
+5V
from 7800 on part 1
EBU
3809 47R
MP890
2864 47p
3716 120R
3717 1R
2854 100n
9803
5802 TYPE
3712 68R
+5V
5801 2u2
COAX1
COAX2
MP891
MP892
to 1805
2865 22n
EBUGND
EBUGND
digital out circuitry
MP866 1880
3721 470R
2891 10u
22n
2882
10K
INNERSW1
INNERSW2
to 1801 on part 1
7871 TDA7073A
MP822
MP823
MP825
MP824
1876 RF-500TB
2870 100n
Carrousel-motor
1878 RF-500TB
2871 22n
Tray-motor
OUT1-
VDD
S
0V
22n 2874
330R 3880
10K 3881
3882 47K
10K 3879
MP871 10V
3851 3R3
+10V
100n 2873
0V
22n 2875
2829 10u
3K9 3884
100K 3883
100K 3885
47K 3886
0V

ITEM	OPT_OUT	COAX_OUT
5802	NO	YES
5801	YES	NO
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	NO	YES
2865	NO	YES
2864	YES	YES
2854	NO	YES


7851
TDA1311
Continuous Calibration DAC
FREQUENCY DIVIDER
RIGHT CHANNEL REGISTER
LEFT CHANNEL REGISTER
CONTROL AND TIMING
VREF
BCK
WS
DATA
GND
VDD
Vor
Vol
CD-TEXT INFO
4V
DQSY
SCLK
SRDT
3.3ms
only during TOC-reading
from kill-circuitry on part 1
from digital-out circuitry
KILLL
KILLR
EBUGND
COAX1
COAX2
IREF
SCL
SILD
SDA
7874 BC547B
7875 BC547B
7812 BC547B
only for TDA1545
to 1805
'loopproof resistors'
3726 (only stuffed, if 1805 -> 18pin)
3725 (only stuffed, if 1805 -> 15 pin)
INNERSW1
INNERSW2
CARR. SW
TRAY SW
CDM-POS
1N4148
7873
HEF4094BP
STR
SHR_CL
STR_OUT
Power-on Reset
for provision only
BZX79-C5V1
to 7800 on part 1
PORE
GND
SRDT
DQSY
uP_CLK
COAX1/IREF/+5
COAX2/KILLR/EBU
GEBU/KILLL
LEFT
GNDA
RIGHT
+5V
+10V
SW_INFO
STR_OUT
SHR_CL
SICL
DATA
SILD
OE_LATCH
CD-TEXT
BASIC VERSION
DIGout / KILL
1805
to connector board on rear side of module
@... for provision only
A
B
C
D
E
F
G
6
7
8
9
10
11
12
13
14
15

1805	G14
1876	E3
1878	F3
1880	D8
1881	E8
1882	D8
2829	F6
2830	B12
2851	C8
2852	C8
2853	B2
2854	C2
2857	C9
2858	C9
2860	A10
2861	B10
2862	A11
2863	B11
2864	D2
2865	D3
2870	E4
2871	F4
2872	G10
2873	F6
2874	E6
2875	F6
2876	E12
2877	G11
2878	G11
2879	G11
2880	D12
2881	G8
2882	D7
3700	B2
3701	B2
3702	B2
3703	A2
3704	A2
3705	A2
3706	A4
3707	B4
3708	B4
3711	A4
3712	C3
3713	G8
3714	G8
3715	G8
3716	D2
3717	C2
3720	C9
3725	D15
3726	C15
3809	C2
3832	B6
3851	E6
3854	B9
3855	C8
3858	A10
3859	B10
3860	A10
3861	B10
3865	B6
3866	C6
3869	C8
3870	E12
3871	E11
3872	B13
3874	B13
3875	C12
3876	C11
3877	E11
3878	D7
3879	E6
3880	E6
3881	E6
3882	E7
3883	F7
3884	F6
3885	F7
3886	F7
3887	E12
3888	E12
3896	G10
3898	D12
3899	D12
5801	C4
5802	C3
6871	D8
6872	E8
6873	D8
6874	E8
6875	F12
7812	G8
7851	A6
7871	E5
7873	D10
7874	C11
7875	D12
7876	A2
9800	D12
9803	C3
9804	B14
9805	B14
9806	B14
9808	A10
9809	A10
9810	B10
9811	B10
9812	A2
MP801	E12
MP802	D13
MP803	F10
MP804	G13
MP805	F13
MP806	F13
MP807	G13
MP808	F13
MP809	G13
MP810	G13
MP811	F13
MP819	C6
MP822	E4
MP823	E4
MP824	F4
MP825	F4
MP833	C5
MP834	B5
MP835	B5
MP836	C8
MP854	A12
MP856	E13
MP857	B12
MP863	C11
MP865	D12
MP866	D8
MP867	E8
MP868	E8
MP869	C11
MP871	E6
MP880	C9
MP881	A2
MP882	A2
MP883	B2
MP884	B2
MP885	B2
MP886	A4
MP887	B4
MP888	B4
MP889	B4
MP890	C2
MP891	D4
MP892	D4
MP899	F14

EXPLODED VIEW (3CDC MODULE)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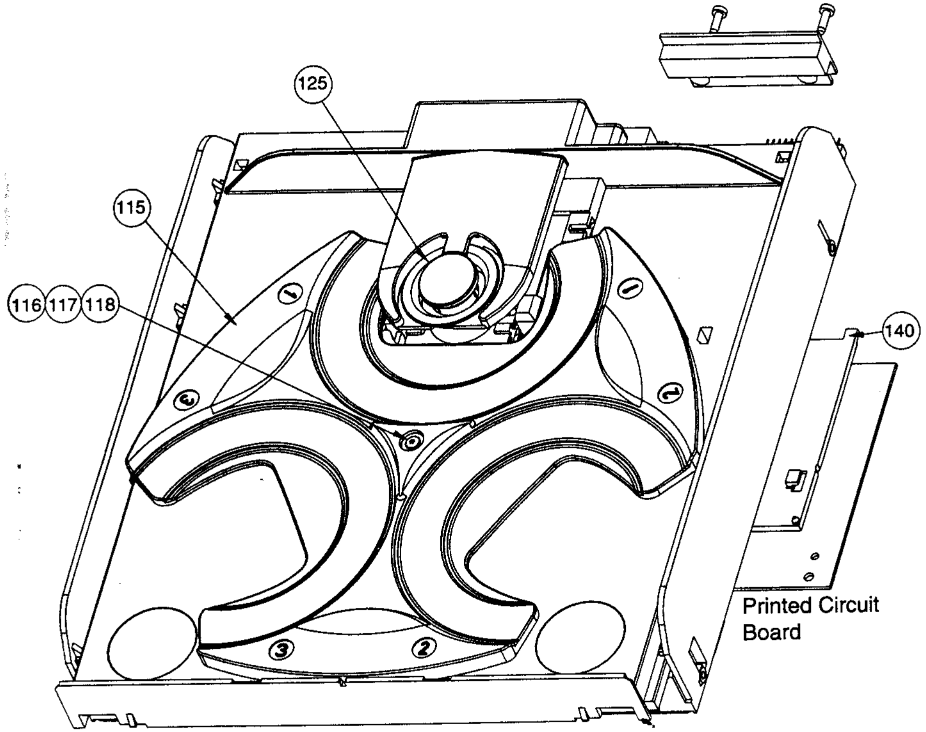
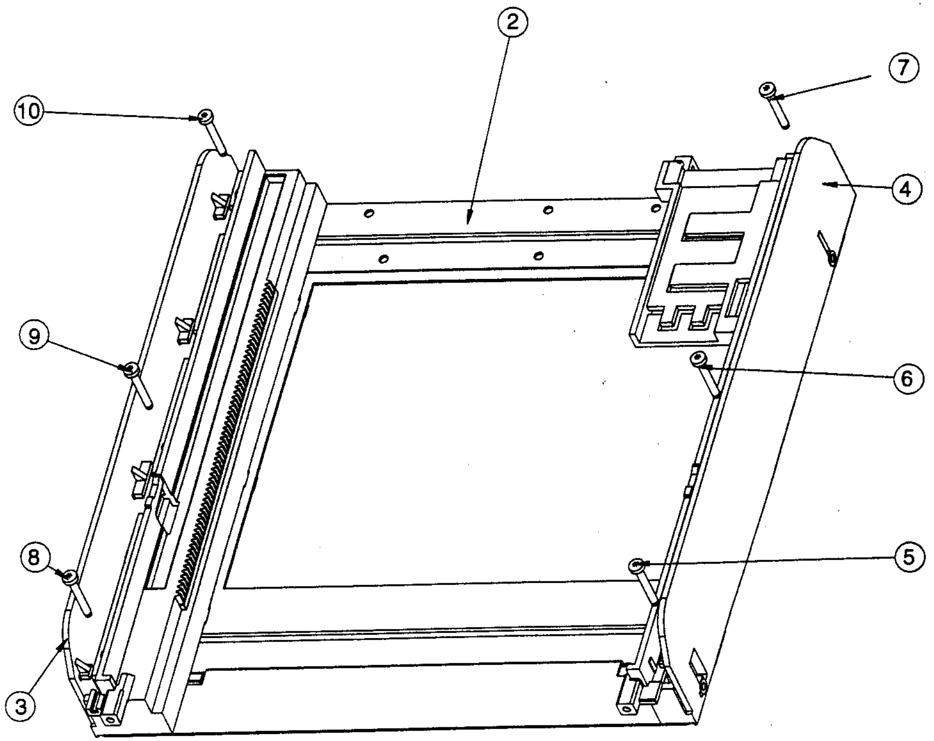


MECHANICAL PARTSLIST 3CDC MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)
3	4822 463 11008	GUIDE LEFT
4	4822 463 11009	GUIDE RIGHT
21	4822 441 11615	DRAWER
22	4822 402 10088	BRACKET TUMBLER
38	4822 502 12548	SCREW M2,6X3,5
39	4822 502 12548	SCREW M2,6X3,5
40	4822 463 11011	SLIDE
41	4822 522 10509	CONTROL DISC
42	4822 522 10492	GEAR WHEEL
43	4822 528 10937	PULLEY
44	4822 522 10493	IDLER WHEEL
45	4822 358 10115	BELT
46	4822 466 10735	ECCENTRIC GEAR WHEEL
50	4822 532 12364	WASHER
51	4822 532 12364	WASHER
52	4822 532 12364	WASHER
53	4822 532 12364	WASHER
35	4822 361 10753	CARROUSEL MOTOR
70	4822 361 10753	CARROUSEL MOTOR



MECHANICAL PARTSLIST 3CDC MODULE

73	4822 502 12548	SCREW M2,6X3,5
74	4822 502 12548	SCREW M2,6X3,5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR DRAWER
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10894	SUPPORT
96	4822 325 50215	SUSPENSION
97	4822 325 50215	SUSPENSION
98	4822 325 50215	SUSPENSION
99	4822 325 50215	SUSPENSION
100	4822 691 10615	CD DRIVE VAM1201
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH DRAWER
120	4822 532 51756	GROMMET
121	4822 532 51756	GROMMET
123	4822 402 10085	SWITCH BRACKET
125	4822 401 11708	DISC CLAMP
140	4822 466 10734	PLATE

ELECTRICAL PARTSLIST 3CDC MODULE

MISCELLANEOUS

1800	4822 267 51453	Flex Foil connector 12pin
1805	4822 265 10979	Flex Foil connector 15pin
1805	4822 265 11182	Flex Foil connector 23pin
1805	4822 265 11184	Flex Foil connector 18pin
1806	4822 265 10981	Flex Foil connector 15pin
1806	4822 267 10757	Flex Foil connector 23pin top entry
1806	4822 265 11185	Flex Foil connector 18pin top entry
1860	4822 265 11183	Flex Foil connector 4pin side entry
1880	4822 276 13503	Switch
1881	4822 276 13503	Switch
1882	4822 276 13503	Switch
8002	4822 320 11974	Flex Foil 15pin length= 190mm
8002	4822 320 12229	Flex Foil 18pin length= 190mm
8002	4822 320 12231	Flex Foil 23pin length= 190mm
8002	4822 320 12232	Flex Foil 15pin length= 480mm

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 126 12787	330pF	10%	50V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12878	1,5nF	10%	16V
2808	4822 122 10466	220pF	10%	50V
2809	4822 126 12882	100nF	20%	50V
2810	4822 122 10459	560pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2812	4822 122 10319	82pF	5%	50V
2813	4822 122 10319	82pF	5%	50V
2814	4822 122 33849	150pF	10%	50V
2815	4822 122 33192	27pF	5%	50V
2817	4822 122 33849	150pF	10%	50V
2819	4822 122 33848	47pF	5%	50V
2820	4822 122 33848	47pF	5%	50V
2821	4822 122 10462	15pF	5%	50V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12882	100nF	20%	50V
2826	4822 124 23624	470µF	20%	16V
2827	4822 126 12882	100nF	20%	50V
2828	4822 126 12882	100nF	20%	50V
2829	4822 124 41579	10µF	20%	50V
2830	4822 126 12882	100nF	20%	50V
2831	4822 124 12032	4,7µF	20%	50V
2832	4822 124 12032	4,7µF	20%	50V
2833	4822 122 33191	22pF	5%	50V
2834	4822 122 33191	22pF	5%	50V
2835	4822 126 12882	100nF	20%	50V
2837	4822 126 12882	100nF	20%	50V
2838	4822 126 12882	100nF	20%	50V
2839	4822 126 12882	100nF	20%	50V
2840	4822 126 12882	100nF	20%	50V
2841	4822 122 10574	1,2nF	10%	16V
2842	4822 121 51387	10nF	20%	16V
2843	4822 126 12882	100nF	20%	50V
2844	4822 122 10574	1,2nF	10%	16V
2845	4822 121 51387	10nF	20%	16V
2846	4822 126 11585	22nF	20%	50V
2847	4822 126 12882	100nF	20%	50V
2849	4822 126 11585	22nF	20%	50V
2850	4822 122 33197	1nF	10%	50V
2851	4822 126 12882	100nF	20%	50V
2852	4822 124 80857	470µF	20%	16V
2853	4822 126 12882	100nF	20%	50V
2856	4822 122 33848	47pF	5%	50V
2859	4822 126 12882	100nF	20%	50V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 126 12339	2,2nF	10%	16V
2863	4822 126 12339	2,2nF	10%	16V
2864	4822 122 33848	47pF	5%	50V
2866	4822 126 12882	100nF	20%	50V
2867	4822 122 33848	47pF	5%	50V
2868	4822 126 12882	100nF	20%	50V
2869	4822 126 12882	100nF	20%	50V
2870	4822 126 12882	100nF	20%	50V
2871	4822 126 11585	22nF	20%	50V
2872	4822 126 12882	100nF	20%	50V
2873	4822 126 12882	100nF	20%	50V
2874	4822 126 11585	22nF	20%	50V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 80857	470µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 122 10466	220pF	10%	50V
2880	4822 121 51387	10nF	20%	16V
2884	4822 126 12882	100nF	20%	50V
2887	4822 126 12882	100nF	20%	50V
2890	4822 124 23624	470µF	20%	16V
2891	4822 124 12125	10µF	20%	16V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3701	4822 116 83883	470Ω	5%	0,16W
3702	4822 116 83883	470Ω	5%	0,16W
3703	4822 116 83883	470Ω	5%	0,16W
3704	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 52195	47Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3710	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3717	4822 116 80176	1Ω	5%	0,5W
3720	4822 116 52176	10Ω	5%	0,5W
3721	4822 116 83883	470Ω	5%	0,16W
3725	4822 116 83864	10kΩ	5%	0,5W
3726	4822 116 83864	10kΩ	5%	0,5W
3800	4822 116 52239	120kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52239	120kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3804	4822 116 52291	56kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 52175	100Ω	5%	0,5W
3810	4822 050 11002	1kΩ	5%	0,2W
3812	4822 116 83884	47kΩ	5%	0,16W
3813	4822 116 83864	10kΩ	5%	0,5W
3816	4822 116 52269	3,3kΩ	5%	0,5W

ELECTRICAL PARTSLIST 3CDC MODULE

RESISTORS

3817	4822 116 83961	6,8kΩ	5%	0,16W
3818	4822 116 83864	10kΩ	5%	0,5W
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52269	3,3kΩ	5%	0,5W
3821	4822 116 52269	3,3kΩ	5%	0,5W
3822	4822 116 52257	22kΩ	5%	0,5W
3823	4822 116 52269	3,3kΩ	5%	0,5W
3824	4822 116 52269	3,3kΩ	5%	0,5W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52278	390kΩ	5%	0,5W
3828	4822 116 52257	22kΩ	5%	0,5W
3830	4822 116 52235	1MΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83883	470Ω	5%	0,16W
3833	4822 116 83864	10kΩ	5%	0,5W
3834	4822 116 52283	4,7kΩ	5%	0,5W
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52245	150kΩ	5%	0,16W
3840	4822 116 52245	150kΩ	5%	0,16W
3841	4822 116 83961	6,8kΩ	5%	0,16W
3842	4822 116 83864	10kΩ	5%	0,5W
3843	4822 116 52303	8,2kΩ	5%	0,5W
3844	4822 116 52226	560Ω	5%	0,5W
3844	4822 116 83883	470Ω	5%	0,16W
3845	4822 116 83864	10kΩ	5%	0,5W
3846	4822 116 52303	8,2kΩ	5%	0,5W
3847	4822 116 52228	680Ω	5%	0,5W
3847	4822 116 83883	470Ω	5%	0,16W
3848	4822 116 52303	8,2kΩ	5%	0,5W
3849	4822 116 52303	8,2kΩ	5%	0,5W
3850	4822 116 83883	470Ω	5%	0,16W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10338	3,3Ω		NFR25
3853	4822 052 10338	3,3Ω		NFR25
3856	4822 116 52219	330Ω	5%	0,5W
3856	4822 116 80176	1Ω	5%	0,5W
3857	4822 050 11002	1kΩ	5%	0,2W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83883	470Ω	5%	0,16W
3861	4822 116 83883	470Ω	5%	0,16W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3865	4822 116 83883	470Ω	5%	0,16W
3866	4822 116 83883	470Ω	5%	0,16W
3867	4822 116 52234	100kΩ	5%	0,5W
3868	4822 116 52191	33Ω	5%	0,5W
3869	4822 116 52175	100Ω	5%	0,5W
3870	4822 116 52226	560Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83874	220kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W

RESISTORS

3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 052 10221	220Ω	5%	
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 116 83883	470Ω	5%	0,16W
3891	4822 116 52272	330kΩ	5%	0,5W
3893	4822 116 52257	22kΩ	5%	0,5W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3896	4822 116 83864	10kΩ	5%	0,5W
3897	4822 116 52226	560Ω	5%	0,5W
3898	4822 116 52226	560Ω	5%	0,5W
3899	4822 116 52213	180Ω	5%	0,5W

COILS

1810	4822 242 10849	CRYSTAL 8MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5801	4822 157 11477	2,2µH

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1

TRANSISTORS

7808	4822 130 41344	BC337-40
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7800 ©	4822 209 12752	SAA7378GP (Signal Processor CD7)
7801 ©	5322 209 11517	PC74HCU04T (HF Amplifier)
7806	4822 209 32852	TDA7073A/N2 (Servo Driver)
7807	4822 209 32852	TDA7073A/N2 (Motor Driver)
7810	4822 130 10845	OPTICAL OUT UNIT
7851	4822 209 32421	TDA1311A/N2(DAC)
7871	4822 209 32852	TDA7073A/N2 (Motor Driver)
7873	5322 209 10421	HEF4094BP (Shift Register)
7876	4822 209 16143	LC89170M (CD Text)

POWER 1 MODULE

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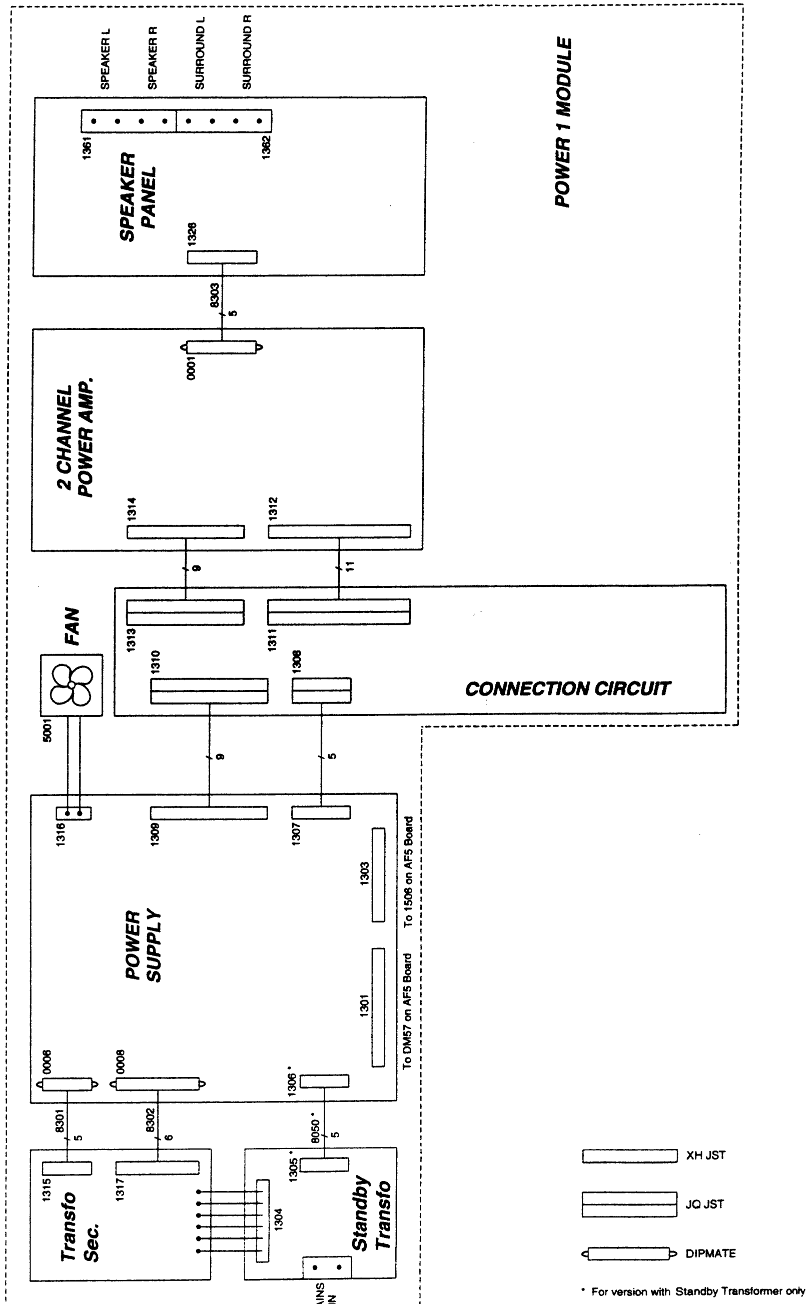
Electrical parts list *(2 x 100W version)* 11-4

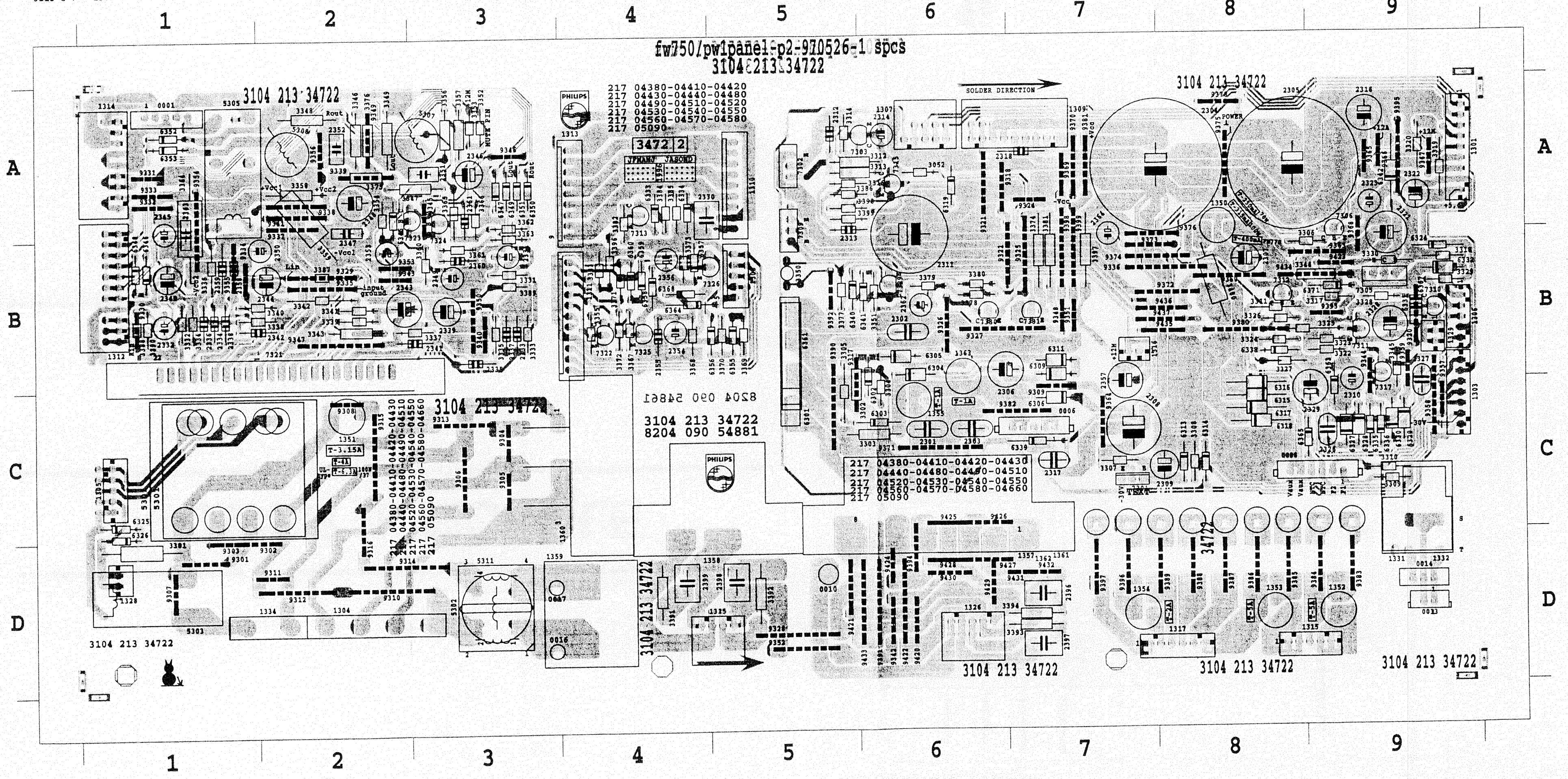
WIRING DIAGRAM


SPEAKER L
SPEAKER R
SURROUND L
SURROUND R
1361
1362
SPEAKER PANEL
1326
8303
5
0001
2 CHANNEL POWER AMP.
1314
1312
9
11
POWER 1 MODULE
FAN
1313
1311
1310
1308
CONNECTION CIRCUIT
5001
9
5
1316
1309
1307
1303
To 1506 on AF5 Board
POWER SUPPLY
1301
To DM57 on AF5 Board
0006
0008
1306 *
8301
5
8302
6
8050 *
5
1315
1317
1305 *
1304
Transfo Sec.
Standby Transfo
MAINS IN
XH JST
JQ JST
DIPMATE

* For version with Standby Transformer only

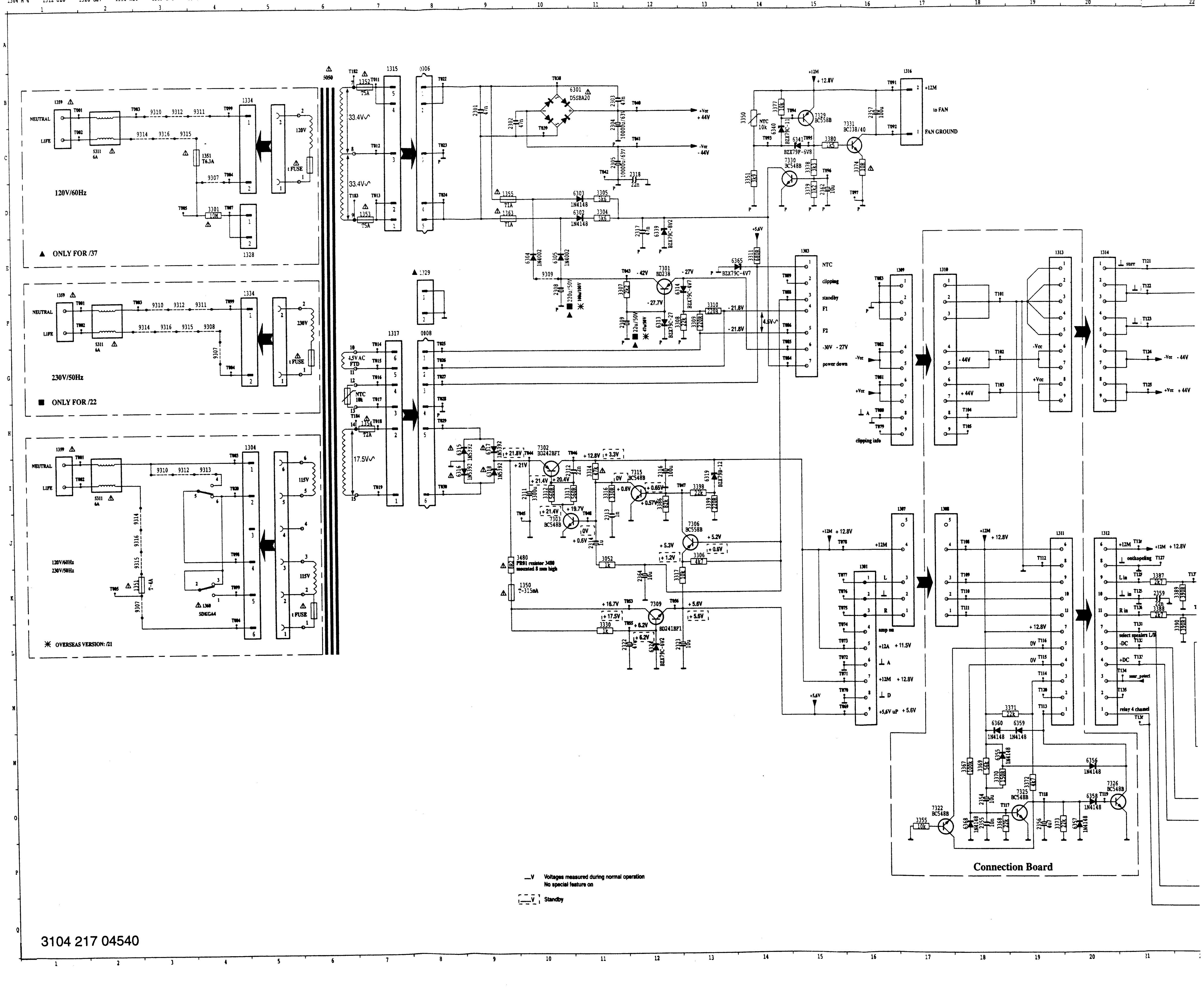
POWER SUPPLY + 2 CHANNEL AMPLIFIER LAYOUT

0001 A 1	0301 C 1	1310 A 5	1352 D 9	2307 B 8	2329 C 9	2346 A 3	2363 A 1	3311 B 8	3330 B 9	3347 A 3	3364 A 1	3381 B 7	3399 A 5	6314 C 8	6335 C 9	6356 B 5	7309 A 5	9302 D 1	9320 B 9	9338 A 2	9355 B 1	9374 B 8	9393 B 9	9430 D 6
0006 C 7	0302 C 1	1311 B 4	1353 D 8	2308 C 7	2330 A 4	2347 A 2	2364 B 7	3312 A 5	3331 B 3	3348 A 2	3365 A 3	3382 A 4	3480 B 8	6315 C 8	6336 C 9	6357 B 4	7310 B 9	9303 D 1	9321 A 6	9339 A 2	9356 A 2	9375 A 8	9394 D 6	9431 D 7
0008 C 9	0303 C 1	1312 B 1	1354 D 7	2309 C 8	2331 B 3	2348 A 2	2396 D 7	3313 A 5	3332 B 1	3349 A 2	3366 A 3	3383 B 4	5302 D 3	6316 C 8	6338 B 8	6358 B 4	7311 B 9	9304 C 3	9322 B 7	9340 B 3	9357 C 9	9376 B 7	9395 A 9	9432 D 7
0010 D 5	0304 C 2	1313 A 4	1355 C 6	2310 C 9	2332 B 1	2349 B 3	2397 D 7	3314 A 5	3333 B 3	3350 B 5	3367 B 4	3384 A 4	5303 D 1	6317 C 8	6339 C 7	6359 B 4	7312 B 8	9305 C 3	9324 A 7	9341 A 2	9358 C 9	9378 A 8	9396 D 7	9433 D 6
0013 D 9	0306 C 2	1314 A 1	1357 D 6	2311 B 6	2333 B 3	2350 B 2	2398 D 5	3316 A 5	3334 B 1	3351 B 6	3368 B 4	3385 A 4	5305 A 1	6318 C 8	6340 B 5	6360 B 4	7313 A 4	9306 C 3	9325 B 7	9342 D 6	9359 B 9	9380 B 8	9397 D 7	9434 B 9
0014 D 9	0307 C 1	1315 D 9	1358 D 5	2312 A 5	2334 B 1	2351 A 3	2399 D 4	3317 B 9	3335 B 3	3352 A 3	3369 B 5	3386 A 5	5307 A 3	6319 A 6	6341 B 6	6361 B 5	7315 A 6	9307 D 1	9326 B 6	9343 B 2	9360 B 8	9381 A 7	9398 B 7	9435 B 8
0016 D 3	0308 C 1	1316 B 7	1359 D 4	2313 A 5	2335 B 3	2352 A 2	3052 A 6	3318 B 9	3336 B 1	3353 A 3	3370 B 5	3387 B 2	5308 A 2	6324 B 9	6342 A 9	6363 C 9	7317 B 9	9308 C 2	9327 B 6	9344 B 9	9363 B 9	9382 C 7	9399 B 7	9436 B 8
0017 D 3	0315 C 2	1317 D 8	1360 C 3	2314 A 6	2336 B 1	2353 B 2	3301 D 1	3319 A 9	3337 B 3	3354 A 2	3371 B 4	3388 B 1	5311 D 3	6325 C 1	6345 A 2	6364 B 4	7321 B 2	9309 C 7	9328 D 5	9345 A 3	9364 C 7	9383 D 9	9420 D 6	9437 B 8
0107 C 9	0319 C 1	1325 D 5	1361 D 6	2316 A 9	2337 B 3	2354 B 4	3302 C 5	3320 A 9	3338 B 2	3355 B 4	3372 B 4	3389 B 3	6301 B 5	6326 C 1	6346 B 1	6365 C 9	7322 B 4	9310 D 2	9329 B 2	9346 A 3	9365 A 9	9384 D 9	9421 D 5	
0108 C 9	1301 A 9	1326 D 6	1362 D 6	2317 C 7	2338 B 1	2355 B 4	3303 C 6	3322 B 9	3339 B 2	3356 A 3	3373 B 4	3390 B 1	6302 B 6	6327 C 9	6347 A 3	6367 B 9	7323 A 3	9311 D 2	9330 B 1	9347 B 2	9366 A 9	9385 D 8	9422 D 6	
0109 C 8	1303 C 9	1328 D 1	1363 B 6	2318 A 7	2339 B 3	2356 B 4	3304 C 6	3323 B 9	3340 B 2	3357 A 3	3374 B 7	3391 D 4	6303 C 6	6328 C 9	6348 B 1	6368 B 4	7324 A 3	9312 D 2	9331 A 1	9348 B 7	9367 A 9	9386 D 8	9423 B 9	
0110 C 8	1304 D 2	1329 B 9	2301 C 6	2321 B 9	2340 B 1	2357 C 7	3305 C 5	3324 B 8	3341 B 2	3358 A 2	3375 A 2	3392 D 5	6304 B 6	6329 C 9	6349 A 3	6371 B 9	7325 B 4	9313 C 3	9332 A 1	9349 A 2	9368 B 9	9387 D 8	9424 D 6	
0111 C 8	1305 C 1	1331 D 9	2302 B 6	2322 A 9	2341 B 3	2358 B 1	3306 B 9	3325 B 8	3342 B 2	3359 A 2	3376 A 2	3393 D 7	6305 B 6	6330 C 9	6350 A 3	7301 C 7	7326 B 5	9314 D 2	9333 A 1	9350 B 3	9369 A 7	9388 D 8	9425 C 6	
0112 C 8	1306 B 9	1332 D 9	2303 C 6	2323 A 9	2342 B 2	2359 B 1	3307 C 7	3326 B 8	3343 B 2	3360 B 3	3377 B 5	3394 D 7	6306 C 7	6331 B 9	6351 A 3	7302 A 5	7329 B 6	9315 C 2	9334 B 1	9351 B 7	9370 A 7	9389 D 8	9426 C 6	
0113 C 8	1307 A 6	1334 D 2	2304 A 7	2326 C 9	2343 B 2	2360 B 3	3308 C 8	3327 B 8	3344 B 9	3361 B 3	3378 B 6	3396 B 4	6309 B 7	6332 B 9	6352 A 1	7303 A 6	7330 B 6	9316 C 2	9335 B 2	9352 D 5	9371 C 6	9390 C 5	9427 D 6	
0114 C 7	1308 B 5	1350 A 8	2305 A 8	2327 C 9	2344 B 2	2361 A 3	3309 C 9	3328 B 9	3345 B 9	3362 A 3	3379 B 6	3397 B 7	6311 B 7	6333 A 4	6353 A 1	7305 B 9	7331 B 7	9317 C 5	9336 B 8	9353 B 2	9372 B 8	9391 D 6	9428 D 6	
0115 C 7	1309 A 7	1351 C 2	2306 B 6	2328 B 9	2345 A 1	2362 B 6	3310 C 9	3329 B 9	3346 A 2	3363 B 3	3380 B 6	3398 A 5	6313 C 8	6334 A 4	6355 B 5	7306 B 9	9301 D 1	9318 A 6	9337 A 2	9354 A 1	9373 B 7	9392 B 5	9429 D 6	


1
2
3
4
5
6
7
8
9
A
B
C
D
fw750/pw1panel-p2-970526-1 spcs
3104 213 34722
217 04380-04410-04420
217 04430-04440-04480
217 04490-04510-04520
217 04530-04540-04550
217 04560-04570-04580
217 05090
PHILIPS
3472 2
SOLDER DIRECTION
8204 090 54881
217 04380-04410-04420-04430
217 04440-04480-04490-04510
217 04520-04530-04540-04550
217 04560-04570-04580-04660
217 05090
Rout
Lout
Lin
+Vcc1
+Vcc2
-Vcc1
input ground
T-3.15A
T-1A
POWER

POWER 1 CIRCUIT
(2 X 100W version)

0001	C26
0006	A 8
0008	F 8
1301	K16
1303	E15
1304	H 4
1307	J16
1308	J17
1309	E16
1310	E17
1311	J19
1312	J20
1313	E19
1314	E20
1315	A 7
1316	B17
1317	F 7
1326	G27
1326	D27
1328	E 4
1329	E 8
1334	F 4
1334	B 4
1350	K10
1351	K 2
1352	B 7
1353	D 7
1354	H 7
1355	D 9
1359	B 1
1359	H 1
1359	F 1
1360	K 4
1361	G31
1362	B31
1363	D 9
2301	B 9
2302	B 9
2303	B11
2304	B11
2305	C11
2308	E10
2309	F11
2311	I10
2312	I10
2313	J11
2314	J11
2316	I12
2317	D12
2318	C12
2322	L11
2323	L12
2331	K22
2332	M22
2333	K23
2334	M23
2335	K24
2336	M24
2337	J24
2338	M24
2339	L23
2340	N24
2341	J26
2342	N26
2343	K26
2344	M26
2345	J25
2346	O24
2347	K26
2348	K26
2349	O25
2350	O25
2351	K26
2352	M26
2353	L22
2354	O18
2355	O18
2356	O19
2357	B16
2358	L24
2359	K21
2360	P25
2361	P27
2362	D15
2364	K12
2396	F28
2396	I28
2397	H28
2397	E28
3052	K11
3301	D 4
3304	D11
3305	D11
3306	J13
3307	E11
3308	F13
3309	F13
3310	F13
3311	E14
3312	I10
3313	I10
3314	I11
3316	I11
3317	K12
3330	L11
3331	K23
3332	M23
3333	K23
3334	M23
3335	K24
3336	M24
3337	J26
3338	M26
3339	K26
3340	L26
3341	L26
3342	L26
3343	L26
3346	N26
3347	L26
3348	M27
3349	K27
3350	B14
3351	C14
3352	L22
3353	L23
3354	L23
3355	O17
3356	N24
3357	P24
3358	J25
3359	P25
3360	O25
3361	P26
3362	N29
3363	N28
3364	P26
3365	O27
3366	P27
3367	N18
3368	O18
3369	N18
3370	N18
3371	M19
3372	N19
3373	O19
3374	C16
3375	L26
3376	N26
3377	B14
3378	C15
3379	D15
3380	C15
3386	I12
3387	K21
3388	K21
3389	K22
3390	L22
3393	H28
3393	D28
3394	I28
3394	F28
3398	I13
3399	I13
3480	J10
5305	K29
5305	O29
5307	K27
5308	M27
5311	F 2
5311	C 2
5311	I 2
6301	B11
6302	D11
6303	D11
6304	E10
6305	E10
6313	F12
6314	E13
6315	H 8
6316	I 8
6317	H 9
6318	I 9
6319	I13
6324	L12
6339	D12
6340	4
6341	5
6345	2
6346	3
6347	3
6348	4
6349	O24
6350	N28
6351	N28
6355	N18
6356	N20
6357	O20

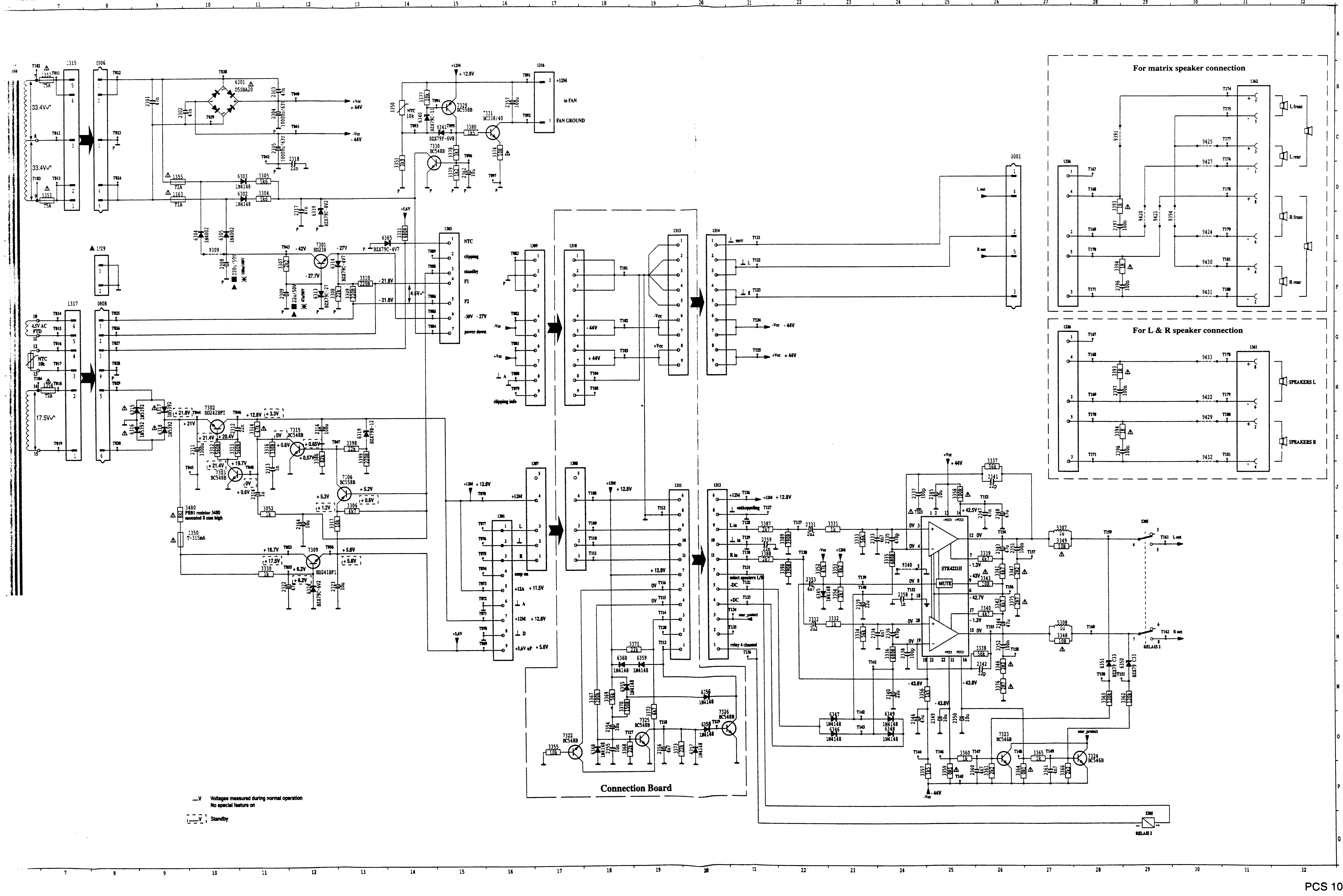

NEUTRAL
LIFE
120V/60Hz
ONLY FOR /37
230V/50Hz
ONLY FOR /22
120V/60Hz
230V/50Hz
OVERSEAS VERSION: /21
SDKGA4
t FUSE
120V
230V
115V
33.4V
17.5V
4.5V AC
FTD
NTC 10k
D5SBA20
+Vcc +44V
-Vcc -44V
BD238
BD242BFI
BD241BFI
BC548B
BC558B
BC338/40
to FAN
FAN GROUND
NTC
clipping
standby
F1
F2
-30V -27V
power down
clipping info
amp on
select speakers L/R
relay 4 channel
surr_protect
PR01 resistor 3480 mounted 5 mm high
Connection Board

_V Voltages measured during normal operation
No special feature on

[_V_] Standby

3104 217 04540

2333	K23
2334	M23
2335	K24
2336	M24
2337	J24
2338	M24
2339	L23
2340	N24
2341	J26
2342	N26
2343	K26
2344	M26
2345	J25
2346	O24
2347	K26
2348	K26
2349	O25
2350	O25
2351	K26
2352	M26
2353	L22
2354	O18
2355	O18
2356	O19
2357	B16
2358	L24
2359	K21
2360	P25
2361	P27
2362	D15
2364	K12
2396	F28
2396	I28
2397	H28
2397	E28
3052	K11
3301	D 4
3304	D11
3305	D11
3306	J13
3307	E11
3308	F13
3309	F13
3310	F13
3311	E14
3312	I10
3313	I10
3314	I11
3316	I11
3317	K12
3330	L11
3331	K23
3332	M23
3333	K23
3334	M23
3335	K24
3336	M24
3337	J26
3338	M26
3339	K26
3340	L26
3341	L26
3342	L26
3343	L26
3346	N26
3347	L26
3348	M27
3349	K27
3350	B14
3351	C14
3352	L22
3353	L23
3354	L23
3355	O17
3356	N24
3357	P24
3358	J25
3359	P25
3360	O25
3361	P26
3362	N29
3363	N28
3364	P26
3365	O27
3366	P27
3367	N18
3368	O18
3369	N18
3370	N18
3371	M19
3372	N19
3373	O19
3374	C16
3375	L26
3376	N26
3377	B14
3378	C15
3379	D15
3380	C15
3386	I12
3387	K21
3388	K21
3389	K22
3390	L22
3393	H28
3393	D28
3394	I28
3394	F28
3398	I13
3399	I13
3480	J10
5305	K29
5305	O29
5307	K27
5308	M27
5311	F 2
5311	C 2
5311	I 2
6301	B11
6302	D11
6303	D11
6304	E10
6305	E10
6313	F12
6314	E13
6315	H 8
6316	I 8
6317	H 9
6318	I 9
6319	I13
6324	L12
6339	D12
6340	C14
6341	C15
6345	L22
6346	O23
6347	N23
6348	O24
6349	O24
6350	N28
6351	N28
6355	N18
6356	N20
6357	O20
6358	O20
6359	M19
6360	M18
6365	E14
6368	O18
7301	E12
7302	H10
7303	J10
7306	J13
7309	K12
7315	I12
7321	K24
7322	O17
7323	O26
7324	O28
7325	O19
7326	O20
7329	B15
7330	C15
7331	C16
9307	C 4
9307	K 2
9307	G 4
9308	F 4
9309	E10
9310	F 3
9310	B 3
9310	I 3
9311	F 4
9311	B 4
9312	B 3
9312	F 3
9312	I 3
9313	I 4
9314	C 3
9314	F 3
9314	J 2
9315	C 3
9315	F 3
9315	J 2
9316	F 3
9316	J 2
9316	C 3
9340	L24
9391	C28
9394	E30
9420	E29
9421	E29
9422	H30
9424	E30
9425	C30
9427	D30
9429	I30
9430	F30
9431	F30
9432	I30
9433	G30


For matrix speaker connection
For L & R speaker connection
Connection Board
L front
L rear
R front
R rear
SPEAKERS L
SPEAKERS R
1315
0006
1317
0008
1329
1303
1309
1310
1313
1314
0001
1326
1362
1361
1307
1308
1301
1311
1312
33.4V
17.5V
4.5V AC FTD
NTC 10k
1352 T5A
1353 T5A
1354 T2A
1355 T1A
1363 T1A
6301 D5SBA20
+Vcc +44V
-Vcc -44V
2304 10000u/63V
2305 10000u/63V
6303 1N4148
6302 1N4148
6304 1N4002
6305 1N4002
6339 BZX79C-8V2
7301 BD238
6365 BZX79C-4V7
6314 BZX79C-4V7
6313 BZX79C-27
NTC
clipping
standby
F1
F2
-30V -27V
power down
clipping info
+12M +12.8V
7329 BC558B
7331 BC338/40
7330 BC548B
6340 BZX79C-11
6341 BZX79F-6V8
3350 NTC 10k
to FAN
FAN GROUND
7302 BD242BFI
7315 BC548B
7303 BC548B
7306 BC558B
7309 BD241BF1
6319 BZX79B-12
6315 1N5392
6316 1N5392
6317 1N5392
6318 1N5392
3480 PR01 resistor 3480 mounted 5 mm high
1350 T-315mA
amp on
+12A +11.5V
+5.6V nP +5.6V
L out
R out
surr
L in
R in
select speakers L/R
+DC
-DC
onkoppeling
relay 4 channel
sour_protect
7322 BC548B
7325 BC548B
7326 BC548B
STK4221II
MUTE
7323 BC546B
7324 BC546B
6351 BZX79 C33
6350 BZX79 C33
5307 1u
5308 1u
3349 10R
3348 10R
5305
RELAIS 2
-Vcc -44V
+Vcc +44V
A B C D E F G H I J K L M N O P Q
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

__V Voltages measured during normal operation
No special feature on

[__V] Standby

ELECTRICAL PARTS LIST - POWER 1 BOARD (2 x 100W version)

MISCELLANEOUS

1350	4822 071 53151	⚠	Fuse T315mA 250V
1350	4822 252 51151	⚠	Fuse T315mA for /37
1351	4822 252 51123	⚠	Fuse T6,3A for /37
1351	4822 071 54002	⚠	Fuse T4A 250V for /21/21M
1352	4822 071 55002	⚠	Fuse T5A 250V
1353	4822 071 55002	⚠	Fuse T5A 250V
1354	4822 071 52002	⚠	Fuse T2A 250V
1355	4822 071 51002	⚠	Fuse T1A 250V
1359	4822 265 31016	⚠	Mains Socket for /37
1359	4822 265 31015	⚠	Mains Socket
1360	4822 272 10269	⚠	Voltage Selector for /21/21M
1361	4822 267 31176		Loudspeaker Socket
1363	4822 071 51002	⚠	Fuse T1A 250V
5001	4822 361 10689		DC Brushless Fan

CAPACITORS

2301	4822 121 43526		47nF 5% 250V
2302	4822 121 43526		47nF 5% 250V
2303	4822 121 43526		47nF 5% 250V
2304	4822 124 80565		10000µF 20% 63V
2305	4822 124 80565		10000µF 20% 63V
2308	5322 124 22094		220µF 20% 50V for /37
2308	4822 124 11505		100µF 100V
2309	4822 124 81151		22µF 50V for /37
2309	4822 124 80196		47µF 20% 50V
2311	4822 124 42367		3300µF 20% 35V
2312	4822 126 11585		22nF +80/-20% 25V
2313	4822 122 33197		1nF 10% 50V
2314	4822 124 40242		1µF 20% 63V
2316	4822 124 81029		100µF 20% 25V
2317	4822 121 43526		47nF 5% 250V
2318	4822 126 11585		22nF +80/-20% 25V
2322	4822 124 40433		47µF 20% 25V
2323	4822 124 41579		10µF 20% 50V
2331	4822 124 41576		2,2µF 20% 50V
2332	4822 124 41576		2,2µF 20% 50V
2333	4822 126 11714		4,7nF 20%
2334	4822 126 11714		4,7nF 20%
2335	4822 122 33519		470pF 10% 50V
2336	4822 122 33519		470pF 10% 50V
2337	4822 122 10466		220pF 10% 50V
2338	4822 122 10466		220pF 10% 50V
2339	4822 124 81151		22µF 50V
2340	4822 124 81151		22µF 50V
2341	4822 122 33191		22pF 5% 50V
2342	4822 122 33191		22pF 5% 50V
2343	4822 124 80196		47µF 20% 50V
2344	4822 124 80196		47µF 20% 50V
2345	4822 124 40248		10µF 20% 63V
	4822 124 11564		10000µF 20% 50V
2346	4822 124 80196		47µF 20% 50V
2347	4822 121 43526		47nF 5% 250V
2348	4822 124 41069		47µF 20% 63V
2349	4822 124 40248		10µF 20% 63V
2350	4822 124 40248		10µF 20% 63V
2351	5322 121 42386		100nF 5% 63V
2352	5322 121 42386		100nF 5% 63V
2353	4822 124 40246		4,7µF 20% 63V
2354	4822 124 41579		10µF 20% 50V
2355	4822 121 51387		10nF20% 16V
2356	4822 124 40246		4,7µF 20% 63V
2357	4822 124 81029		100µF 20% 25V
2358	4822 122 33197		1nF 10% 50V
2359	4822 126 11585		22nF +80/-20% 25V
2360	4822 126 11714		4,7nF 20%
2361	4822 126 11714		4,7nF 20%
2362	4822 124 41579		10µF 20% 50V
2364	4822 124 41579		10µF 20% 50V
2396	5322 121 42386		100nF 5% 63V
2397	5322 121 42386		100nF 5% 63V

RESISTORS

3052	4822 116 83864		10k 5% 0,5W
3301	4822 053 21106	⚠	10M 5% 0,5W
3304	4822 116 52289		5k6 5% 0,5W
3305	4822 116 52289		5k6 5% 0,5W
3306	4822 116 52283		4k7 5% 0,5W
3307	4822 116 52256		2k2 5% 0,5W
3308	4822 116 52257		22k 5% 0,5W
3309	4822 116 83872		220R 5% 0,5W
3310	4822 116 83872		220R 5% 0,5W
3311	4822 116 52228		680R 5% 0,5W
3312	4822 050 25601		560R 1% 0,6W
3313	4822 050 25601		560R 1% 0,6W
3314	4822 116 83884	⚠	47k 5% 0,5W
3316	4822 116 52219		330R 5% 0,5W
3317	4822 116 83864		10k 5% 0,5W
3330	4822 050 11002		1k 1% 0,4W
3331	4822 050 11002		1k 1% 0,4W
3332	4822 050 11002		1k 1% 0,4W
3333	4822 116 52291		56k 5% 0,5W
3334	4822 116 52291		56k 5% 0,5W
3335	4822 116 52228		680R 5% 0,5W
3336	4822 116 52228		680R 5% 0,5W
3337	4822 116 52291		56k 5% 0,5W
3338	4822 116 52291		56k 5% 0,5W
3339	4822 116 52283		4k7 5% 0,5W
3340	4822 116 52283		4k7 5% 0,5W
3341	4822 116 52283		4k7 5% 0,5W
3342	4822 116 52283		4k7 5% 0,5W
3343	4822 052 10109	⚠	10R 5% 0,33W
3346	4822 052 10228	⚠	2R2 5% 0,33W
3347	4822 052 10228	⚠	2R2 5% 0,33W
3348	4822 052 10109	⚠	10R 5% 0,33W

ELECTRICAL PARTS LIST - POWER 1 BOARD (2 x 100W version)

3349	4822 052 10109	⚠	10R 5% 0,33W
3350	4822 117 12063		NTC DC 5W 10k 5%
3351	4822 116 52276		3k9 5% 0,5W
3352	4822 116 83884		47k 5% 0,5W
3353	4822 116 52303		8k2 5% 0,5W
3354	4822 116 52263		2k7 5% 0,5W
3355	4822 116 83864		10k 5% 0,5W
3356	4822 050 21502		1k5 1% 0,6W
3357	4822 050 21502		1k5 1% 0,6W
3358	4822 052 10101	⚠	100R 5% 0,33W
3359	4822 113 80633	⚠	0R1 5% 3W
3360	4822 050 11002		1k 1% 0,4W
3361	4822 116 52256		2k2 5% 0,5W
3362	4822 116 52239		120k 5% 0,5W
3363	4822 116 52239		120k 5% 0,5W
3364	4822 113 80633	⚠	0R1 5% 3W
3365	4822 050 11002		1k 1% 0,4W
3366	4822 116 52256		2k2 5% 0,5W
3367	4822 116 52234		100k 5% 0,5W
3368	4822 116 52257		22k 5% 0,5W
3369	4822 116 52291		56k 5% 0,5W
3370	4822 116 83868		150R 5% 0,5W
3371	4822 116 52257		22k 5% 0,5W
3372	4822 116 52283		4k7 5% 0,5W
3373	4822 116 52257		22k 5% 0,5W
3374	4822 052 10109	⚠	10R 5% 0,33W
3375	4822 052 10278	⚠	2R7 5% 0,33W
3376	4822 052 10278	⚠	2R7 5% 0,33W
3377	4822 116 83864		10k 5% 0,5W
3378	4822 116 52269		3k3 5% 0,5W
3379	4822 116 52207		1k2 5% 0,5W
3380	4822 116 52243		1k5 5% 0,5W
3386	4822 116 52304		82k 5% 0,5W
3387	4822 116 52263		2k7 5% 0,5W
3388	4822 116 52263		2k7 5% 0,5W
3389	4822 116 83881		390R 5% 0,5W
3390	4822 116 83881		390R 5% 0,5W
3393	4822 052 10108	⚠	1R 5% 0,33W
3394	4822 052 10108	⚠	1R 5% 0,33W
3398	4822 116 52257		22k 5% 0,5W
3399	4822 116 83872		220R 5% 0,5W
3480	4822 053 10828	⚠	8R2 5% 1W

COILS & FILTERS

5305	4822 280 80777		Relay 2P 12V 5A
5307	4822 157 70599		Ind. Fixed Bead EMI
5308	4822 157 70599		Ind. Fixed Bead EMI
5311	4822 157 10417	⚠	Main Choke 6A

DIODES

6301	4822 130 82078	⚠	D5SBA20
6302	4822 130 30621		1N4148
6303	4822 130 30621		1N4148
6304	5322 130 30684		1N4002RL
6305	5322 130 30684		1N4002RL
6313	4822 130 34379		BZX79-B27
6314	4822 130 34174		BZX79-B4V7
6315	5322 130 80686	⚠	1N5392
6316	5322 130 80686	⚠	1N5392
6317	5322 130 80686	⚠	1N5392
6318	5322 130 80686	⚠	1N5392
6319	4822 130 34197		BZX79-B12
6324	4822 130 34167		BZX79-B6V2
6339	4822 130 34382		BZX79-B8V2
6340	4822 130 34488		BZX79-B11
6341	4822 130 34278		BZX79-B6V8
6345	4822 130 30621		1N4148
6346	4822 130 30621		1N4148
6347	4822 130 30621		1N4148
6348	4822 130 30621		1N4148
6349	4822 130 30621		1N4148
6350	4822 130 34142		BZX79-B33
6351	4822 130 34142		BZX79-B33
6355	4822 130 30621		1N4148
6356	4822 130 30621		1N4148
6357	4822 130 30621		1N4148
6358	4822 130 30621		1N4148
6359	4822 130 30621		1N4148
6360	4822 130 30621		1N4148
6365	4822 130 34174		BZX79-B4V7
6368	4822 130 30621		1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7301	4822 130 40917		BD238
7302	4822 130 63575		BD242BFI
7303	4822 130 40959		BC547B
7306	4822 130 44568		BC557B
7309	4822 130 63615		BD241BFI
7315	4822 130 40959		BC547B
7321	4822 209 13158	⚠	STK4221 II
7322	4822 130 40959		BC547B
7323	4822 130 44461		BC546B
7324	4822 130 44461		BC546B
7325	4822 130 40959		BC547B
7326	4822 130 40959		BC547B
7329	4822 130 44568		BC557B
7330	4822 130 40959		BC547B
7331	5322 130 44779		BC338-40

Note : Only the parts mentioned in this list are normal service spare parts.

3349	4822 052 10109	⚠	10R 5% 0,33W
3350	4822 117 12063		NTC DC 5W 10k 5%
3351	4822 116 52276		3k9 5% 0,5W
3352	4822 116 83884		47k 5% 0,5W
3353	4822 116 52303		8k2 5% 0,5W
3354	4822 116 52263		2k7 5% 0,5W
3355	4822 116 83864		10k 5% 0,5W
3356	4822 050 21502		1k5 1% 0,6W
3357	4822 050 21502		1k5 1% 0,6W
3358	4822 052 10101	⚠	100R 5% 0,33W
3359	4822 113 80633	⚠	0R1 5% 3W
3360	4822 050 11002		1k 1% 0,4W
3361	4822 116 52256		2k2 5% 0,5W
3362	4822 116 52239		120k 5% 0,5W
3363	4822 116 52239		120k 5% 0,5W
3364	4822 113 80633	⚠	0R1 5% 3W
3365	4822 050 11002		1k 1% 0,4W
3366	4822 116 52256		2k2 5% 0,5W
3367	4822 116 52234		100k 5% 0,5W
3368	4822 116 52257		22k 5% 0,5W
3369	4822 116 52291		56k 5% 0,5W
3370	4822 116 83868		150R 5% 0,5W
3371	4822 116 52257		22k 5% 0,5W
3372	4822 116 52283		4k7 5% 0,5W
3373	4822 116 52257		22k 5% 0,5W
3374	4822 052 10109	⚠	10R 5% 0,33W
3375	4822 052 10278	⚠	2R7 5% 0,33W
3376	4822 052 10278	⚠	2R7 5% 0,33W
3377	4822 116 83864		10k 5% 0,5W
3378	4822 116 52269		3k3 5% 0,5W
3379	4822 116 52207		1k2 5% 0,5W
3380	4822 116 52243		1k5 5% 0,5W
3386	4822 116 52304		82k 5% 0,5W
3387	4822 116 52263		2k7 5% 0,5W
3388	4822 116 52263		2k7 5% 0,5W
3389	4822 116 83881		390R 5% 0,5W
3390	4822 116 83881		390R 5% 0,5W
3393	4822 052 10108	⚠	1R 5% 0,33W
3394	4822 052 10108	⚠	1R 5% 0,33W
3398	4822 116 52257		22k 5% 0,5W
3399	4822 116 83872		220R 5% 0,5W
3480	4822 053 10828	⚠	8R2 5% 1W

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6315	5322 130 80686	⚠	1N5392
6316	5322 130 80686	⚠	1N5392
6317	5322 130 80686	⚠	1N5392
6318	5322 130 80686	⚠	1N5392
6319	4822 130 34197		BZX79-B12
6324	4822 130 34167		BZX79-B6V2
6339	4822 130 34382		BZX79-B8V2
6340	4822 130 34488		BZX79-B11
6341	4822 130 34278		BZX79-B6V8
6345	4822 130 30621		1N4148
6346	4822 130 30621		1N4148
6347	4822 130 30621		1N4148
6348	4822 130 30621		1N4148
6349	4822 130 30621		1N4148
6350	4822 130 34142		BZX79-B33
6351	4822 130 34142		BZX79-B33
6355	4822 130 30621		1N4148
6356	4822 130 30621		1N4148
6357	4822 130 30621		1N4148
6358	4822 130 30621		1N4148
6359	4822 130 30621		1N4148
6360	4822 130 30621		1N4148
6365	4822 130 34174		BZX79-B4V7
6368	4822 130 30621		1N4148

TRANSISTORS & INTEGRATED CIRCUITS

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7303	4822 130 40959		BC547B
7306	4822 130 44568		BC557B
7309	4822 130 63615		BD241BFI
7315	4822 130 40959		BC547B
7321	4822 209 13158	⚠	STK4221 II
7322	4822 130 40959		BC547B
7323	4822 130 44461		BC546B
7324	4822 130 44461		BC546B
7325	4822 130 40959		BC547B
7326	4822 130 40959		BC547B
7329	4822 130 44568		BC557B
7330	4822 130 40959		BC547B
7331	5322 130 44779		BC338-40

Note : Only the parts mentioned in this list are normal service spare parts.

AF5 BOARD

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Component and Chip layouts 12-2
Circuit Diagram 12-3
Electrical parts list... 12-4

BRIEF INTRODUCTION OF THE AF5 BOARD

The AF5 Board consists of the following features :

a. SOFAC IC

SOFAC IC TEA6321 (7553) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C data from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX. It also has a MONO input which is tied to ground via 100n. In our application , software will switch the input source to MONO input during STANDBY mode and some other occasions where noise from other input sources is undesirable.

Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise. Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING

Karaoke Mic. Mixing can be configured to cater for one of the following :

NK : Non Karaoke.
SK : Simple Karaoke which caters for mic. mixing with additional mic. amplifier board.
FK : Full Karaoke with vocal fader and echo effect with additional karaoke board.

c. DOLBY PRO LOGIC (DPL) INTERFACE

DPL Interface can be configured to cater for DPL and also DPL with one of the karaoke functions.

d. LINE OUT

Line Out with JST XH connector for connection to LINE OUT cinch socket.

e. SUB-WOOFER OUTPUT

Sub-Woofer Output with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible Surround effect using transistor circuit BC847C (7517, 7518, 7519, 7520) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone Amplifier using Op-Amp. NJM4556AM (7501).

h. CD STANDBY SWITCH

CD Standby control circuit using transistors BC327-40 (7515) and BC847C (7516) which switches on the supply to CD servo control IC , HF circuit and the laser light pen in CD mode only.

i. HEADPHONE SENSING CIRCUIT

Headphone Sensing circuit to mute centre and surround channels in DPL application.

j. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF5 Board for interfacing with the power board of different output power.

AF5 Boards application

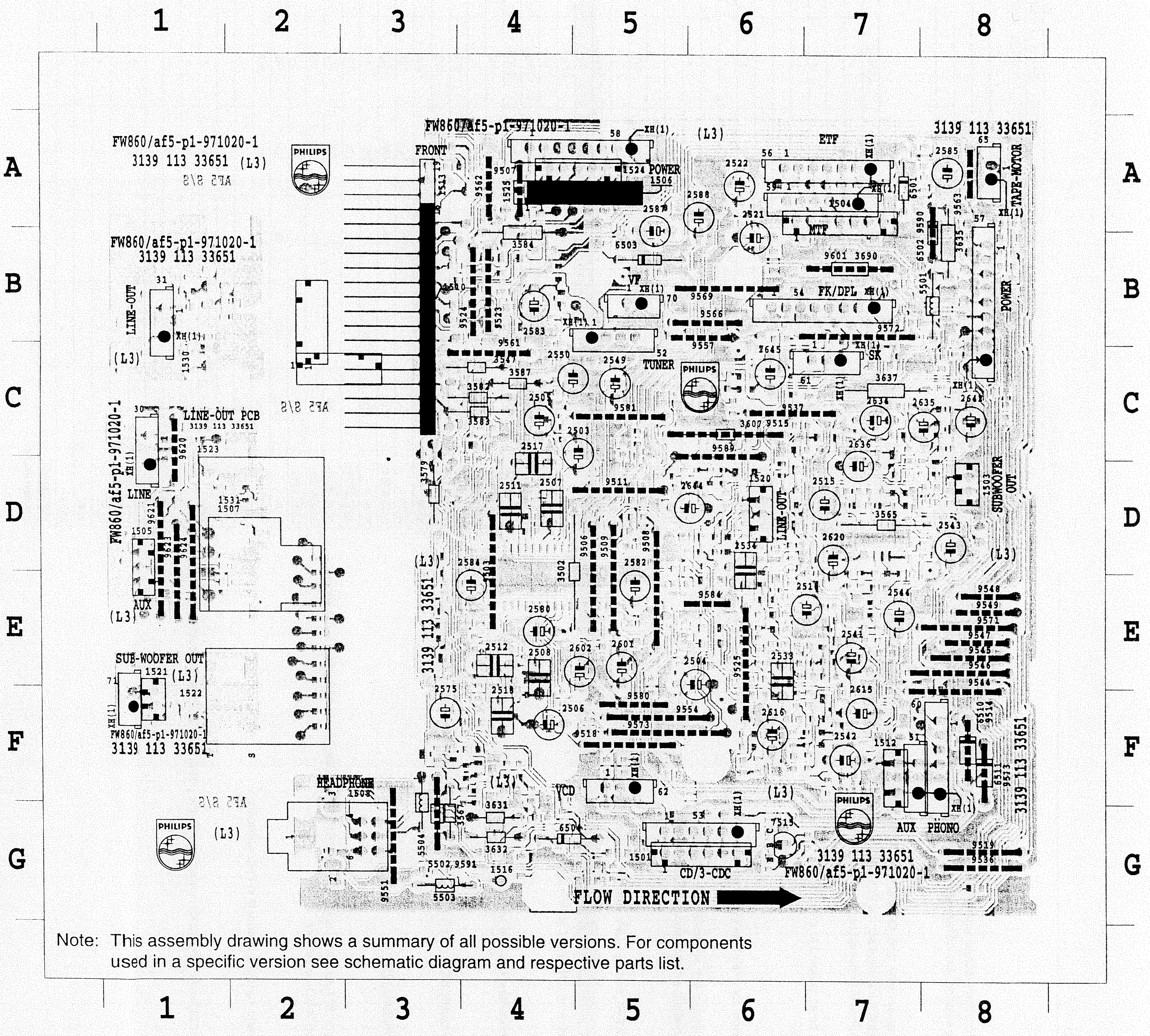
A50170	FW530C/21/21M , FW535C/21/21M , FW570C/21/21M/33 , FW575C/21/21M/33 , FW538/21
A50180	FW530C/22/34/37 , FW535C/22/30/34 , FW550C/22 , FW570C/22/37 , FW538/22 , FW72/37
A50340	FW754P/37
A50400	FW775P/22/37
A50430	FW765P/22/34 , FW795W/22
A50510	FW560C/37

Variations table for AF5 Board

	A50170	A50180	A50340	A50400	A50430	A50510
DM30	x	x	x	-	x	-
DM31	-	-	-	x	-	x
DM54,1517	-	-	x	x	x	-
DM56	x	x	-	x	x	-
DM59	-	-	x	-	-	x
DM61,1577	x	-	-	-	-	-
1506	x	x	x	-	x	-
1510	x	x	x	-	x	-
1513	-	-	-	x	-	x
1523	x	x	x	-	x	-
1525	-	-	-	x	-	x
1530,1531	-	-	-	x	-	x
1579	7P	7P	6P	7P	7P	6P
2521,2522	4.7μF	4.7μF	0.47μF	4.7μF	4.7μF	0.47μF
2585	47μF	47μF	-	47μF	47μF	-
2586	-	-	-	100nF	-	100nF
2603	-	-	100pF	100pF	100pF	-
2643	-	-	1μF	1μF	1μF	-
2652,2653	22nF	22nF	22nF	-	22nF	-
3501,3502	100R	100R	100R	10k	100R	10k
3519,3520	-	-	6k8	6k8	6k8	-
3521,3522	15k	-	-	-	-	-
3523,3524	8k2	8k2	47k	8k2	8k2	47k
3525,3526	3k3	3k3	39k	3k3	3k3	39k
3529	-	-	5k6	5k6	5k6	-
3530	-	-	15k	15k	15k	-
3563,3564	150k	150k	100k	100k	100k	100k
3589	5k6	5k6	-	5k6	5k6	-
3597,3598	-	-	27k	27k	27k	-
3605,3606	1k5	-	2k2	2k2	2k2	-
3645,3646	-	-	1k8	1k8	1k8	-
3661,3662	5k6	-	-	-	-	-
3674	8k2	8k2	15k	15k	15k	8k2
3675	2k2	3k3	4k7	8k2	3k3	8k2
4501,4502	-	x	-	-	-	x
4525,4580	x	-	-	-	-	-
4527	-	-	x	x	x	-
4572	x	-	x	x	x	-
4573	-	x	x	x	x	x
4600,4602	-	-	-	x	-	x
4611,4612	x	-	x	x	x	-
4623	-	x	x	x	x	x
6501	x	x	-	x	x	-
9507	x	x	-	-	x	-
9589	x	x	x	x	x	x
9623,9624	-	-	-	x	-	x

x = Item in use.

COMPONENT LAYOUT


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
FW860/af5-p1-971020-1
3139 113 33651 (L3)
FW860/af5-p1-971020-1
3139 113 33651
LINE-OUT
31
XH(1)
1530
(L3)
30
LINE-OUT PCB
3139 113 33651
1523
9620
LINE
1531
1507
1505
9621
AUX
(L3)
SUB-WOOFER OUT
1521 (L3)
71
1522
FW860/af5-p1-971020-1
3139 113 33651
HEADPHONE
1508
(L3)
FRONT
1513
9562
9507
1525
58
XH(1)
(L3)
1524 POWER
1506
ETF
56
59
1504
MTF
XH(1)
3139 113 33651
2585
65
57
TAPE-MOTOR
XH(1)
2522
2588
2587
2521
6503
3584
6501
9563
9590
6502
3635
9601 3690
5501
VF
XH(1)
70
9569
9566
54
FK/DPL
XH(1)
9572
POWER
9524
9523
2583
9561
9557
2645
SK
52
TUNER
3587
3582
3583
2550
2549
2505
9581
61
3637
2634
2635
2641
XH(1)
3607 9515
2503
2517
9589
2636
3579
2511
2507
9511
2644
1520
LINE-OUT
2515
1503
SUBWOOFER OUT
3565
2543
(L3)
2584
3502
9506
9509
9508
2582
2534
2620
2516
2544
9584
9548
9549
9571
2580
2541
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2512
2508
2602
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9544
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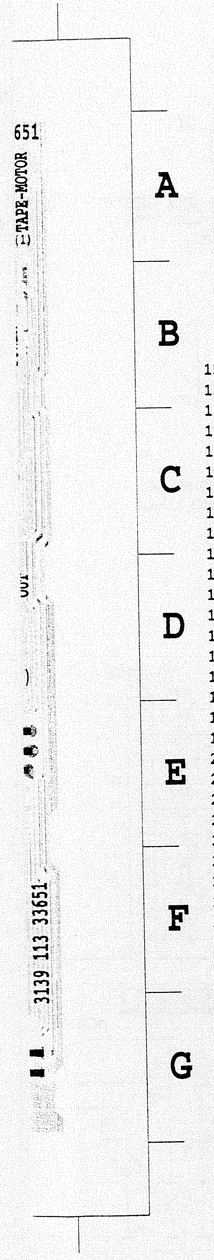
2575
2518
9580
2506
9554
60
51
9573
2616
2542
1512
6510
9510
6511
9513
3139 113 33651
VCD
62
XH(1)
3631
3632
1516
53
(L3)
7515
PHILIPS
AUX PHONO
XH(1)
1501
CD/3-CDC
3139 113 33651
FW860/af5-p1-971020-1
9519
9536
5504
5502 9591
5503
9551
FLOW DIRECTION

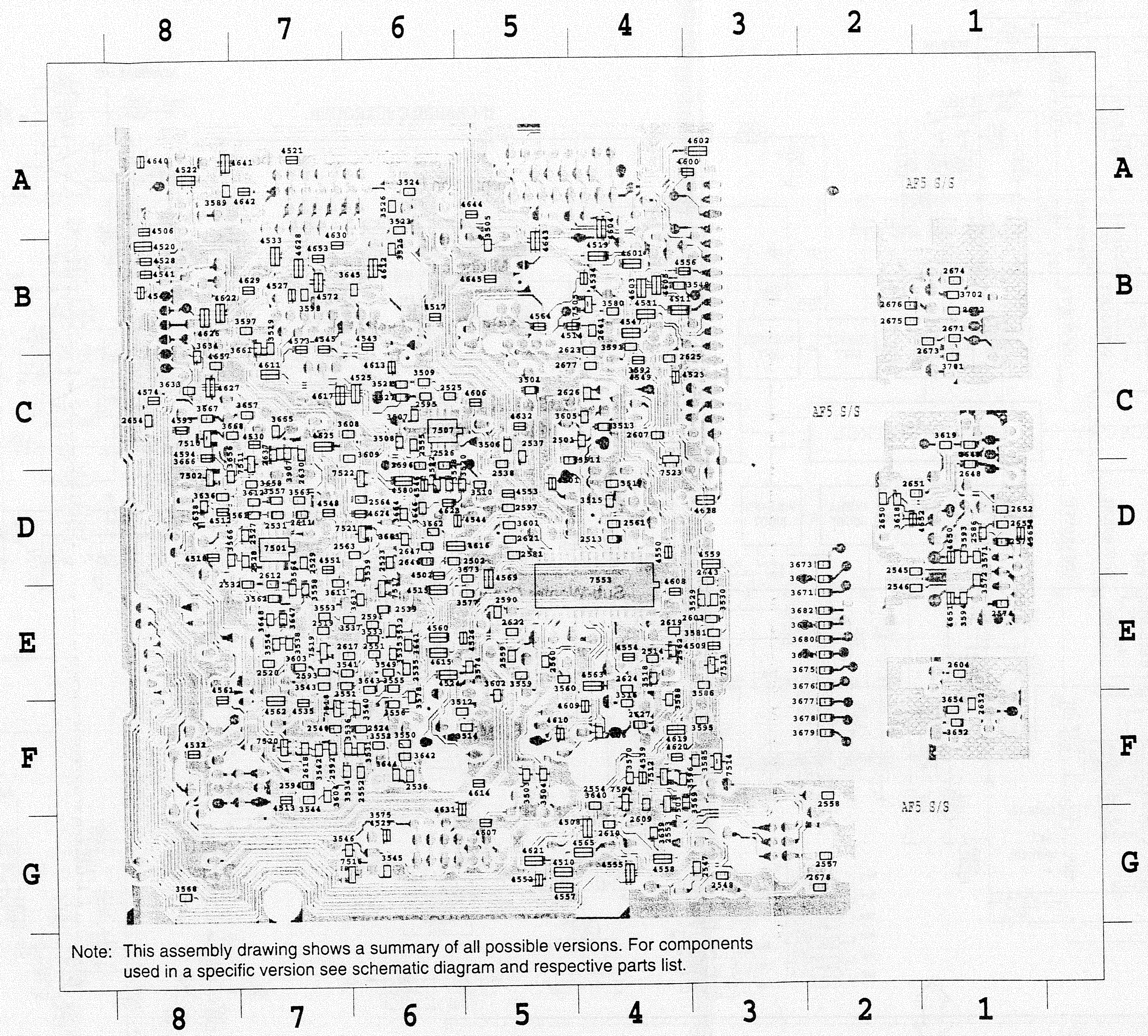
Note: This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

30	C	1
31	B	1
51	F	7
52	B	5
53	G	6
54	B	7
56	A	7
57	B	8
58	A	5
59	A	7
60	F	8
61	C	7
62	F	5
65	A	8
70	B	5
71	F	1
1501	G	6
1503	D	8
1504	A	7
1505	D	1
1506	A	5
1507	E	2
1508	G	2
1510	B	3
1512	F	7
1513	E	3
1516	G	4
1520	D	6
1521	F	1
1522	F	2
1523	D	2
1524	A	5
1525	A	5
1530	B	2
1531	C	2
2503	C	5
2504	E	6
2505	C	4
2506	F	4
2507	D	4
2508	E	4
2511	D	4
2512	E	4
2515	D	7
2516	E	7
2517	D	4
2518	F	4
2521	B	6
2522	A	6
2533	E	6
2534	D	6
2541	E	7
2542	F	7
2543	D	8
2544	E	7
2549	C	5
2550	C	5
2575	F	3

CHIP LAYOUT



30 C 1	2580 E 4	9536 G 8
31 B 1	2582 E 5	9537 C 6
51 F 7	2583 B 4	9544 F 8
52 B 5	2584 E 4	9545 E 8
53 G 6	2585 A 8	9546 E 8
54 B 7	2587 B 5	9547 E 8
56 A 7	2588 A 6	9548 E 8
57 B 8	2601 E 5	9549 E 8
58 A 5	2602 E 5	9551 G 3
59 A 7	2615 F 7	9554 F 5
60 F 8	2616 F 6	9557 B 6
61 C 7	2620 D 7	9561 C 4
62 F 5	2634 C 7	9562 A 4
65 A 8	2635 C 8	9563 A 8
70 B 5	2636 D 7	9566 B 6
71 F 1	2642 C 8	9569 B 6
1501 G 6	2644 D 6	9571 E 8
1503 D 8	2645 C 6	9572 B 7
1504 A 7	3502 E 5	9573 F 5
1505 D 1	3547 C 4	9580 F 5
1506 A 5	3565 D 7	9581 C 5
1507 E 2	3567 G 3	9584 E 6
1508 G 2	3579 D 3	9589 C 6
1510 B 3	3582 C 4	9590 B 8
1512 F 7	3583 C 4	9591 G 3
1513 B 3	3584 B 4	9601 B 7
1516 G 4	3587 C 4	9620 C 1
1520 D 6	3607 C 6	9621 D 1
1521 F 1	3631 G 4	9623 E 1
1522 F 2	3632 G 4	9624 D 1
1523 D 2	3635 B 8	
1524 A 5	3637 C 7	
1525 A 5	3690 B 7	
1530 B 2	5501 B 8	
1531 C 2	5502 G 3	
2503 C 5	5503 G 3	
2504 E 6	5504 G 3	
2505 C 4	6501 A 7	
2506 F 4	6502 B 8	
2507 D 4	6503 B 5	
2508 E 4	6504 G 4	
2511 D 4	6510 F 8	
2512 E 4	6511 F 8	
2515 D 7	7515 G 6	
2516 E 7	9503 E 4	
2517 D 4	9506 E 5	
2518 F 4	9507 A 4	
2521 B 6	9508 E 5	
2522 A 6	9509 E 5	
2533 E 6	9511 D 5	
2534 D 6	9513 F 8	
2541 E 7	9514 F 8	
2542 F 7	9515 C 6	
2543 D 8	9518 F 5	
2544 E 7	9519 G 8	
2549 C 5	9523 B 4	
2550 C 5	9524 B 4	
2575 F 3	9525 E 6	

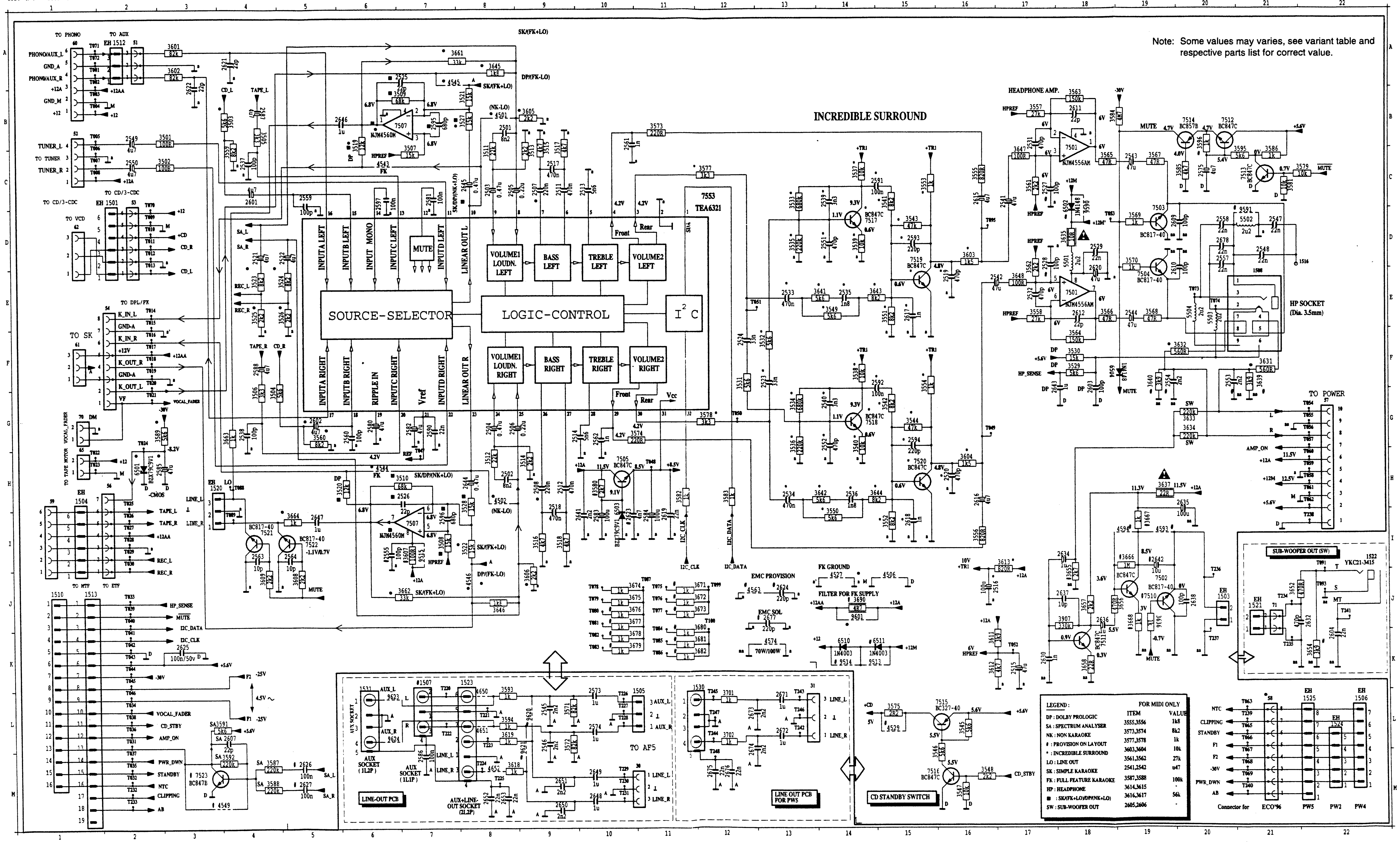


Note: This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

2501 C 4	2618 F 7	3528 D 6	3596 F 4	4502 D 6	4574 C 8	7514 F 3
2502 D 6	2619 E 4	3529 E 3	3597 B 7	4506 A 8	4580 D 6	7516 G 7
2513 D 4	2621 D 5	3530 E 3	3598 B 7	4508 G 4	4593 C 8	7517 E 6
2514 E 4	2622 E 5	3531 F 6	3601 D 5	4509 E 3	4594 C 8	7518 F 7
2519 E 7	2623 C 4	3532 E 6	3602 E 5	4510 G 5	4600 A 3	7519 E 7
2520 E 7	2624 E 4	3533 E 6	3603 E 7	4511 B 4	4601 B 4	7520 F 7
2523 D 6	2625 C 4	3534 F 7	3604 F 7	4512 D 8	4602 A 3	7521 D 6
2524 F 6	2626 C 4	3535 E 6	3605 C 4	4513 F 7	4603 B 4	7522 D 6
2525 C 6	2627 F 4	3536 F 7	3606 F 4	4514 B 4	4604 A 4	7523 C 4
2526 C 6	2630 C 7	3537 E 6	3608 C 6	4515 E 6	4605 B 4	7553 E 4
2527 D 7	2632 F 1	3538 E 7	3609 C 6	4517 B 6	4606 C 5	45658 D 1
2528 D 7	2637 C 7	3539 D 6	3611 E 7	4518 D 8	4607 G 5	
2529 D 7	2638 D 8	3540 F 6	3612 D 7	4519 B 4	4608 E 4	
2531 D 7	2641 B 4	3541 E 7	3613 E 6	4520 B 8	4609 F 4	
2532 E 7	2643 E 3	3542 F 7	3618 D 2	4521 A 7	4610 F 5	
2535 E 6	2646 D 6	3543 E 7	3619 C 1	4522 A 8	4611 C 7	
2536 F 6	2647 D 6	3544 F 7	3633 C 8	4523 C 4	4612 B 6	
2537 C 5	2648 D 1	3545 G 6	3634 C 8	4524 E 6	4613 C 6	
2538 C 5	2649 C 1	3546 G 7	3636 D 8	4525 C 6	4614 F 5	
2539 E 6	2650 D 2	3548 B 4	3639 G 4	4526 E 5	4615 E 6	
2540 F 7	2651 D 2	3549 E 6	3640 F 4	4527 B 7	4616 D 6	
2545 D 2	2652 D 1	3550 F 6	3641 E 6	4528 B 8	4617 C 7	
2546 E 2	2653 D 1	3551 E 7	3642 F 6	4529 G 6	4618 D 3	
2547 G 3	2654 C 8	3552 F 6	3643 E 6	4530 C 7	4619 F 4	
2548 G 3	2671 B 1	3553 E 7	3644 F 6	4531 B 4	4620 F 4	
2551 E 6	2672 B 1	3554 E 7	3645 B 6	4532 F 8	4621 G 5	
2552 F 6	2673 B 1	3555 E 6	3646 D 6	4533 B 7	4622 B 8	
2553 G 4	2674 B 1	3556 F 6	3647 E 7	4534 B 4	4623 D 6	
2554 F 4	2675 B 2	3557 D 7	3648 E 7	4535 F 7	4624 D 6	
2555 C 6	2676 B 2	3558 E 7	3652 F 1	4539 F 4	4625 C 7	
2557 G 2	2677 C 4	3559 E 5	3654 F 1	4541 B 8	4626 B 8	
2558 F 2	2678 G 2	3560 E 5	3655 C 7	4542 B 8	4627 C 8	
2559 E 5	3501 C 5	3561 D 7	3656 D 8	4543 B 6	4628 B 7	
2560 E 5	3503 F 5	3562 E 7	3657 C 7	4544 D 6	4629 B 7	
2561 D 4	3504 F 5	3563 D 7	3658 D 7	4545 B 7	4630 B 7	
2562 E 4	3505 B 5	3564 E 7	3661 B 7	4546 D 6	4631 F 6	
2563 D 6	3506 C 5	3566 D 8	3662 D 6	4547 B 4	4632 C 5	
2564 D 6	3507 C 6	3568 G 8	3663 D 6	4548 D 7	4640 A 8	
2573 D 1	3508 C 6	3569 F 4	3664 D 6	4549 C 4	4641 A 8	
2574 E 1	3509 C 6	3570 F 4	3666 C 8	4550 D 4	4642 A 7	
2581 D 5	3510 D 5	3571 D 1	3667 C 8	4551 D 7	4643 B 5	
2586 D 1	3511 C 5	3572 E 1	3668 C 8	4552 G 5	4644 A 5	
2590 E 5	3512 F 5	3573 D 5	3671 E 2	4553 D 5	4645 B 5	
2591 E 6	3513 C 4	3574 E 5	3672 E 2	4554 E 4	4650 D 1	
2592 F 7	3514 F 5	3575 G 6	3673 D 2	4555 G 4	4651 E 1	
2593 E 7	3515 D 4	3577 E 5	3674 E 2	4556 B 4	4652 D 2	
2594 F 7	3516 F 4	3578 F 6	3675 E 2	4557 G 5	4653 B 7	
2595 C 6	3517 D 4	3580 B 4	3676 E 2	4558 G 4	4657 C 8	
2596 C 6	3518 E 4	3581 E 3	3677 F 2	4559 D 3	7501 D 7	
2597 D 5	3519 B 7	3585 F 3	3678 F 2	4560 E 6	7502 D 8	
2603 E 3	3520 D 5	3586 E 3	3679 F 2	4561 F 8	7503 F 4	
2604 E 1	3521 C 6	3588 F 4	3680 E 2	4562 F 7	7504 F 4	
2607 C 4	3522 D 6	3589 A 8	3681 E 2	4563 E 4	7505 B 4	
2609 F 4	3523 A 6	3591 B 4	3682 E 2	4564 B 5	7507 C 6	
2610 G 4	3524 A 6	3592 C 4	3701 C 1	4565 G 4	7510 C 8	
2611 D 7	3525 B 6	3593 D 1	3702 B 1	4569 D 5	7511 C 7	
2612 E 7	3526 A 6	3594 E 1	3907 C 7	4572 B 7	7512 F 4	
2617 E 7	3527 C 6	3595 F 3	4501 D 5	4573 B 7	7513 E 3	

CIRCUIT DIAGRAM

1501	C 2
1503	J20
1504	H 1
1505	K11
1506	L22
1507	K 7
1508	E21
1510	J 1
1512	A 2
1513	J 1
1516	D22
1520	H 4
1521	J21
1522	I22
1523	K 8
1524	L22
1525	L22
1530	K11
1531	K 6
2501	B 8
2502	H 8
2503	C 8
2504	G 8
2505	C 8
2506	G 8
2507	C 9
2508	H 9
2511	C 9
2512	H 9
2513	C10
2514	G10
2515	K17
2516	J16
2517	C 9
2518	H 9
2519	E16
2520	H16
2521	D 4
2522	D 5
2523	F13
2524	F12
2525	A 7
2526	H 7
2527	C17
2528	D17
2529	D18
2531	B17
2532	E17
2533	E13
2534	H13
2535	E14
2536	H14
2537	C 4
2538	G 4
2539	C14
2540	G14
2541	C17
2542	E17
2543	C19
2544	E19
2545	L 9
2546	L 9
2547	D21
2548	D21
2549	B 2
2550	C 2
2551	D14
2552	G14
2553	F20
2554	F19
2555	I 6
2557	D20
2558	D20
2559	C 5
2560	G 6
2561	B10
2562	G10
2563	I 4
2564	I 5
2573	K10
2574	L10
2575	C20
2580	G 6
2581	C 7
2582	G 7
2583	I10
2584	I11
2585	H 3
2586	M 7
2587	B 4
2588	F 4
2590	G 7
2591	C15
2592	F15
2593	D15
2594	G15
2595	B 7
2596	I 7
2597	C 6
2601	C 4
2602	G 5
2603	F18
2604	K22
2607	L 4
2609	D20
2610	E20
2611	B18
2612	E18
2615	C16
2616	H16
2617	E15
2618	I15
2619	I11
2620	E18
2621	A 4
2622	A 3
2623	I10
2624	J13
2625	K 3
2626	M 5
2627	M 5
2630	K17
2632	J22
2634	I18
2635	H20
2636	J18
2637	J18
2638	J20
2641	I10
2642	I19
2643	F18
2644	H 8
2645	C 8
2646	B 6
2647	I 5
2648	M10
2649	M10
2650	M 9
2651	M 9
2652	M 8
2653	M 8
2654	J16
2671	L13
2672	L13
2673	L12
2674	L12
2675	M12
2676	M12
2677	J13
2678	D20
30	M10
31	K13
3501	B 3
3502	C 3
3503	B 4
3504	G 4
3505	B 4
3506	G 4
3507	C 7
3508	I 7
3509	B 7
3510	H 7
3511	C 8
3512	H 8
3513	C 9
3514	H 9
3515	B 9
3516	I 9
3517	B 9
3518	I 9
3519	B 6
3520	H 6
3521	B 8
3522	I 8
3523	E 4
3524	E 5
3525	E 4
3526	E 5
3527	B 8
3528	H 8
3529	F18
3530	F18
3531	F12
3532	F13
3533	C13
3534	G13
3535	D13
3536	G13
3537	C14
3538	F14
3539	D14
3540	G14
3541	C15
3542	G15
3543	D15
3544	G15
3545	L16
3546	M15
3547	M16
3548	M16
3549	E14
3550	I14
3551	E15
3552	I15
3553	C15
3554	F15
3555	C16
3556	I16
3557	B17
3558	E17
3559	C 4
3560	G 5
3561	C17
3562	D17
3563	B18
3564	F18
3565	C18
3566	E18
3567	C19
3568	E19
3569	D19
3570	D19
3571	L 9
3572	L 9
3573	B11
3574	G11
3575	L15
3577	C12
3578	G12
3579	C22
3580	H10
3581	C21
3582	H11
3583	H12
3584	B18
3585	C20
3586	C21
3587	M 4
3588	M 4
3589	G 2
3591	L 3
3592	M 4
3593	L 8
3594	L 8
3595	C21
3596	B20
3597	B 5
3598	H 5
3601	A 3
3602	A 3
3603	D16
3604	H16
3605	B 9
3606	J 9
3607	I 7
3608	J 5
3609	J 4
3611	K16
3612	K16
3613	I17
3618	M 8
3619	L 8
3631	F21
3632	F20
3633	G20
3634	G20
3635	D18
3636	J19
3637	H19
3639	F21
3640	F19
3641	E14
3642	H14
3643	E15
3644	H15
3645	A 8
3646	J 8
3647	C17
3648	E17
3652	J21
3654	K22
3655	J18
3656	J19
3657	J18
3658	K18
3661	A 8
3662	J 7
3663	G 4
3664	I 5
3666	I19
3667	I19
3668	J19
3671	J12
3672	J12
3673	J12
3674	J10
3675	J10
3676	J10
3677	J10
3678	K10
3679	K10
3680	J12
3681	K12
3682	K12
3690	J14
3701	L12
3702	L12
3907	J18
4501	B 8
4502	H 8
4506	J15
4527	J14
4529	L15
4543	C 6
4544	H 6
4545	A 7
4546	J 8
4549	M 4
4563	J12
4574	K13
4593	I19
4594	I19
4650	L 8
4651	L 8
4652	M 8
51	A 2
52	B 1
53	C 2
54	E 2
5501	D18
5502	D21
5503	E20
5504	E20
56	H 2
57	G22
58	L21
59	H 1
60	A 1
61	F 1
62	D 1
65	G 1
6501	H 2
6502	C18
6503	H10
6504	F19
6510	K14
6511	K15
70	G 1
71	J21
7501	B18
7501	E18
7502	J19
7503	D19
7504	E19
7505	H10
7507	B 6
7507	I 7
7510	J19
7511	K18
7512	B20
7513	C21
7514	B20
7515	L15
7516	M15
7517	D15
7518	G15
7519	D15
7520	H15
7521	I 4
7522	I 5
7523	M 3
7553	C12
9513	K14
9514	K14
9515	I 7
9590	C18
9591	D21
9601	J14
9620	L 9
9621	L 9
9623	L 6
9624	L 6



TO PHONO
TO AUX
PHONO/AUX_L
GND_A
PHONO/AUX_R
GND_M
TUNER_L
TO TUNER
TUNER_R
TO CD/3-CDC
TO VCD
TO SK
K_IN_L
K_IN_R
K_OUT_R
K_OUT_L
VF
VOCAL_FADER
TO TAPE MOTOR
TAPE_L
TAPE_R
REC_L
REC_R
TO MTF
TO ETF
HP_SENSE
MUTE
I2C_DATA
I2C_CLK
CLIPPING
STANDBY
NTC
AB
PWR_DWN
AMP_ON
CD_STBY
SK/(FK+LO)
DP/(FK-LO)
NJM4560M
INCREDIBLE SURROUND
SOURCE-SELECTOR
LOGIC-CONTROL
I2C
MUTE
INPUTA LEFT
INPUTB LEFT
INPUT MONO
INPUTC LEFT
INPUTD LEFT
LINEAR OUT L
INPUTA RIGHT
INPUTB RIGHT
RIPPLE IN
INPUTC RIGHT
Vref
INPUTD RIGHT
LINEAR OUT R
VOLUME1 LOUDN. LEFT
BASS LEFT
TREBLE LEFT
VOLUME2 LEFT
VOLUME1 LOUDN. RIGHT
BASS RIGHT
TREBLE RIGHT
VOLUME2 RIGHT
Front
Rear
Vcc
7553
TEA6321
HEADPHONE AMP.
NJM4556AM
HP SOCKET (Dia. 3.5mm)
TO POWER
SUB-WOOFER OUT (SW)
YKC21-3415
EMC PROVISION
FK GROUND
FILTER FOR FK SUPPLY
EMC SOL
70W/100W
LINE-OUT PCB
AUX SOCKET (1L2P)
AUX SOCKET (1L1P)
AUX+LINE-OUT SOCKET (2L2P)
TO AF5
LINE OUT PCB FOR PW5
CD STANDBY SWITCH
Connector for
ECO'96
PW5
PW2
PW4

Note: Some values may varies, see variant table and respective parts list for correct value.

LEGEND :

DP : DOLBY PROLOGIC
SA : SPECTRUM ANALYSER
NK : NON KARAOKE
: PROVISION ON LAYOUT
* : INCREDIBLE SURROUND
LO : LINE OUT
SK : SIMPLE KARAOKE
FK : FULL FEATURE KARAOKE
HP : HEADPHONE
■ : SK/(FK+LO)/DP/(NK+LO)
SW : SUB-WOOFER OUT

FOR MIDI ONLY

ITEM	VALUE
3555,3556	1k8
3573,3574	8k2
3577,3578	1k
3603,3604	10k
3561,3562	27k
2541,2542	u47
3587,3588	100k
3614,3615	-
3616,3617	56k
2605,2606	-

9620, 9621 } Provision for Dual Aux-In

1531, 9623, 9624 } For Power 5 Only

4650, 4651 } Used when 1507 OR 1523 is used

ELECTRICAL PARTS LIST - AF5 BOARD

MISCELLANEOUS

1508	4822 267 40898	Headphone Socket
1510	4822 265 41325	Connector 16 Pin
1522	4822 267 31729	Cinch Socket - Sub-Woofer out
1523	4822 267 31823	Cinch Socket - Aux/Line-out

CAPACITORS

2501	4822 126 10525	8,2nF10% 63V
2502	4822 126 10525	8,2nF10% 63V
2503	4822 124 41407	0,47µF 20% 63V
2504	4822 124 41407	0,47µF 20% 63V
2505	4822 124 40746	0,22µF20% 63V
2506	4822 124 40746	0,22µF20% 63V
2507	4822 121 42408	220nF 5% 63V
2508	4822 121 42408	220nF 5% 63V
2511	4822 121 51252	470nF 5% 63V
2512	4822 121 51252	470nF 5% 63V
2513	4822 122 32646	5,6nF10% 50V
2514	4822 122 32646	5,6nF10% 50V
2515	4822 124 81029	100µF20% 25V
2516	4822 124 81029	100µF20% 25V
2517	4822 121 51252	470nF 5% 63V
2518	4822 121 51252	470nF 5% 63V
2519	5322 122 32268	470pF 10% 50V
2520	5322 122 32268	470pF 10% 50V
2521	4822 124 40246	4,7µF20% 63V
2522	4822 124 40246	4,7µF20% 63V
2523	4822 126 12105	33nF 5% 63V
2524	4822 126 12105	33nF 5% 63V
2525	5322 122 32658	22pF 5% 50V
2526	5322 122 32658	22pF 5% 50V
2529	5322 122 32654	22nF10% 63V
2531	5322 122 32268	470pF 10% 50V
2532	5322 122 32268	470pF 10% 50V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 126 10847	1,8nF10% 63V
2536	4822 126 10847	1,8nF10% 63V
2537	5322 122 32531	100pF 5% 50V
2538	5322 122 32531	100pF 5% 50V
2539	4822 122 33891	3,3nF10% 63V
2540	4822 122 33891	3,3nF10% 63V
2541	4822 124 41751	47µF 20% 50V
2542	4822 124 41751	47µF 20% 50V
2543	4822 124 41751	47µF 20% 50V
2544	4822 124 41751	47µF 20% 50V
2545	5322 122 32268	470pF 10% 50V
2546	5322 122 32268	470pF 10% 50V
2547	5322 122 32654	22nF10% 63V
2548	4822 126 10002	100nF20% 25V
2549	4822 124 40246	4,7µF20% 63V
2550	4822 124 40246	4,7µF20% 63V
2551	5322 122 32268	470pF 10% 50V
2552	5322 122 32268	470pF 10% 50V
2557	5322 122 32654	22nF10% 63V
2558	5322 122 32654	22nF10% 63V
2559	5322 122 32531	100pF 5% 50V
2560	5322 122 32531	100pF 5% 50V
2561	5322 122 34123	1nF10% 50V
2562	5322 122 34123	1nF10% 50V
2563	5322 122 32448	10pF 5% 50V
2564	5322 122 32448	10pF 5% 50V
2573	4822 126 13836	1µF 16V
2574	4822 126 13836	1µF 16V
2575	4822 124 40246	4,7µF20% 63V
2580	4822 124 41751	47µF 20% 50V
2581	4822 126 10002	100nF20% 25V
2582	4822 124 41751	47µF 20% 50V
2583	4822 124 81029	100µF20% 25V
2584	4822 124 81029	100µF20% 25V
2585	4822 124 41751	47µF 20% 50V
2587	4822 124 40246	4,7µF20% 63V
2588	4822 124 40246	4,7µF20% 63V
2590	5322 122 32654	22nF10% 63V
2591	4822 126 10002	100nF20% 25V
2592	4822 126 10002	100nF20% 25V
2593	4822 122 33575	220pF 5% 50V
2594	4822 122 33575	220pF 5% 50V
2595	4822 122 32535	680pF10% 63V
2596	4822 122 32535	680pF10% 63V
2597	4822 126 10002	100nF20% 25V
2601	4822 124 40246	4,7µF20% 63V
2602	4822 124 40246	4,7µF20% 63V
2604	5322 122 32654	22nF10% 63V
2609	5322 122 32531	100pF 5% 50V
2610	5322 122 32531	100pF 5% 50V
2611	5322 122 32658	22pF 5% 50V
2612	5322 122 32658	22pF 5% 50V
2615	4822 124 40246	4,7µF20% 63V
2616	4822 124 40246	4,7µF20% 63V
2617	5322 122 34123	1nF10% 50V
2618	5322 122 34123	1nF10% 50V
2619	5322 122 32654	22nF10% 63V
2620	4822 124 40433	47µF20% 25V
2621	5322 122 32658	22pF 5% 50V
2622	5322 122 32658	22pF 5% 50V
2623	5322 126 10223	4,7nF10% 63V
2625	4822 126 10002	100nF20% 25V
2630	5322 122 34123	1nF10% 50V
2632	5322 122 32268	470pF 10% 50V
2634	4822 124 40242	1µF20% 63V
2635	4822 124 81029	100µF20% 25V
2636	4822 124 40242	1µF20% 63V
2637	5322 122 32448	10pF 5% 50V
2638	5322 122 32531	100pF 5% 50V

ELECTRICAL PARTS LIST - AF5 BOARD

2641	4822 122 33175	2,2nF 20% 50V
2644	4822 124 41407	0,47µF 20% 63V
2645	4822 124 41407	0,47µF 20% 63V
2646	4822 126 13836	1µF 16V
2647	4822 126 13836	1µF 16V
2648	4822 126 13836	1µF 16V
2649	4822 126 13836	1µF 16V
2650	4822 122 33175	2,2nF 20% 50V
2651	4822 122 33175	2,2nF 20% 50V
2652	5322 122 32654	22nF10% 63V
2653	5322 122 32654	22nF10% 63V
2654	4822 122 33575	220pF 5% 50V
2678	5322 122 32654	22nF10% 63V

RESISTORS

3501	4822 051 20101	100R 5% 0,1W
3502	4822 116 52175	100R 5% 0,5W
3503	4822 051 20562	5k6 5% 0,1W
3504	4822 051 20562	5k6 5% 0,1W
3505	4822 051 20332	3k3 5% 0,1W
3506	4822 051 20332	3k3 5% 0,1W
3507	4822 051 20153	15k 5% 0,1W
3508	4822 051 20153	15k 5% 0,1W
3509	4822 051 20683	68k 5% 0,1W
3510	4822 051 20683	68k 5% 0,1W
3511	4822 051 20223	22k 5% 0,1W
3512	4822 051 20223	22k 5% 0,1W
3513	4822 117 11449	2k2 1% 0,1W
3514	4822 117 11449	2k2 1% 0,1W
3515	4822 051 20472	4k7 5% 0,1W
3516	4822 051 20472	4k7 5% 0,1W
3517	4822 051 20472	4k7 5% 0,1W
3518	4822 051 20472	4k7 5% 0,1W
3521	4822 051 20153	15k 5% 0,1W
3522	4822 051 20153	15k 5% 0,1W
3523	4822 051 20822	8k2 5% 0,1W
3524	4822 051 20822	8k2 5% 0,1W
3525	4822 051 20332	3k3 5% 0,1W
3526	4822 051 20332	3k3 5% 0,1W
3527	4822 051 20153	15k 5% 0,1W
3528	4822 051 20153	15k 5% 0,1W
3531	4822 051 20562	5k6 5% 0,1W
3532	4822 051 20562	5k6 5% 0,1W
3533	4822 051 20684	680k 5% 0,1W
3534	4822 051 20684	680k 5% 0,1W
3535	4822 051 20224	220k 5% 0,1W
3536	4822 051 20224	220k 5% 0,1W
3537	4822 117 10833	10k 1% 0,1W
3538	4822 117 10833	10k 1% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3540	4822 117 10833	10k 1% 0,1W
3541	4822 051 20822	8k2 5% 0,1W
3542	4822 051 20822	8k2 5% 0,1W
3543	4822 117 10834	47k 1% 0,1W
3544	4822 117 10834	47k 1% 0,1W
3545	4822 051 20562	5k6 5% 0,1W
3546	4822 051 20562	5k6 5% 0,1W
3547	4822 116 83864	10k 5% 0,5W
3548	4822 117 11449	2k2 1% 0,1W
3549	4822 051 20562	5k6 5% 0,1W
3550	4822 051 20562	5k6 5% 0,1W
3551	4822 051 20822	8k2 5% 0,1W
3552	4822 051 20822	8k2 5% 0,1W
3553	4822 051 10102	1k 2% 0,25W
3554	4822 051 10102	1k 2% 0,25W
3555	4822 117 11454	820R 1% 0,1W
3556	4822 117 11454	820R 1% 0,1W
3557	4822 051 20273	27k 5% 0,1W
3558	4822 051 20273	27k 5% 0,1W
3559	4822 051 20822	8k2 5% 0,1W
3560	4822 051 20822	8k2 5% 0,1W
3561	4822 051 20153	15k 5% 0,1W
3562	4822 051 20153	15k 5% 0,1W
3563	4822 051 20154	150k 5% 0,1W
3564	4822 051 20154	150k 5% 0,1W
3565	4822 116 52195	47R 5% 0,5W
3566	4822 051 20479	47R 5% 0,1W
3567	4822 116 52195	47R 5% 0,5W
3568	4822 051 20479	47R 5% 0,1W
3569	4822 051 10102	1k 2% 0,25W
3570	4822 051 10102	1k 2% 0,25W
3571	4822 117 11149	82k 1% 0,1W
3572	4822 117 11149	82k 1% 0,1W
3573	4822 117 11503	220R 1% 0.1W
3574	4822 117 11503	220R 1% 0.1W
3575	4822 051 20228	2R2 5% 0,1W
3577	4822 051 20472	4k7 5% 0,1W
3578	4822 051 20472	4k7 5% 0,1W
3579	4822 116 83864	10k 5% 0,5W
3581	4822 117 10833	10k 1% 0,1W
3582	4822 050 11002	1k 1% 0,4W
3583	4822 050 11002	1k 1% 0,4W
3584	4822 050 24705	4M7 1% 0,6W
3585	4822 051 20472	4k7 5% 0,1W
3586	4822 051 10102	1k 2% 0,25W
3589	4822 051 20562	5k6 5% 0,1W
3593	4822 051 10102	1k 2% 0,25W
3594	4822 051 10102	1k 2% 0,25W
3595	4822 051 20562	5k6 5% 0,1W
3601	4822 117 11149	82k 1% 0,1W
3602	4822 117 11149	82k 1% 0,1W
3603	4822 117 11139	1k5 1% 0,1W
3604	4822 117 11139	1k5 1% 0,1W
3605	4822 117 11139	1k5 1% 0,1W

ELECTRICAL PARTS LIST - AF5 BOARD

RESISTORS

3606	4822 117 11139	1k5 1% 0,1W
3608	4822 117 11449	2k2 1% 0,1W
3609	4822 117 11449	2k2 1% 0,1W
3611	4822 051 20392	3k9 5% 0,1W
3612	4822 051 20472	4k7 5% 0,1W
3613	4822 117 11454	820R 1% 0,1W
3618	4822 051 10102	1k 2% 0,25W
3619	4822 051 10102	1k 2% 0,25W
3631	4822 116 52226	560R 5% 0,5W
3632	4822 116 52226	560R 5% 0,5W
3633	4822 051 20224	220k 5% 0,1W
3634	4822 051 20224	220k 5% 0,1W
3635	4822 052 10109 ⚠	10R 5% 0,33W
3636	4822 051 10102	1k 2% 0,25W
3637	4822 052 10229 ⚠	22R 5% 0,33W
3641	4822 051 20562	5k6 5% 0,1W
3642	4822 051 20562	5k6 5% 0,1W
3643	4822 051 20822	8k2 5% 0,1W
3644	4822 051 20822	8k2 5% 0,1W
3647	4822 051 20101	100R 5% 0,1W
3648	4822 051 20101	100R 5% 0,1W
3652	4822 051 20471	470R 5% 0,1W
3654	4822 051 20392	3k9 5% 0,1W
3656	4822 051 20471	470R 5% 0,1W
3657	4822 117 11449	2k2 1% 0,1W
3658	4822 051 20229	22R 5% 0,1W
3661	4822 051 20562	5k6 5% 0,1W
3662	4822 051 20562	5k6 5% 0,1W
3663	4822 051 10102	1k 2% 0,25W
3664	4822 051 10102	1k 2% 0,25W
3674	4822 051 20822	8k2 5% 0,1W
3675	4822 051 20332	3k3 5% 0,1W
3675	4822 117 11449	2k2 1% 0,1W /21/21M
3907	4822 051 20334	330k 5% 0,1W
4501	4822 051 20008	0R Jumper 0805
4502	4822 051 20008	0R Jumper 0805
4506	4822 051 20008	0R Jumper 0805
4508	4822 051 10008	0R Jumper 1206
4509	4822 051 20008	0R Jumper 0805
4510	4822 051 10008	0R Jumper 1206
4512	4822 051 20008	0R Jumper 0805
4513	4822 051 20008	0R Jumper 0805
4514	4822 051 20008	0R Jumper 0805
4515	4822 051 10008	0R Jumper 1206
4517	4822 051 20008	0R Jumper 0805
4518	4822 051 20008	0R Jumper 0805
4519	4822 051 10008	0R Jumper 1206
4520	4822 051 10008	0R Jumper 1206
4521	4822 051 20008	0R Jumper 0805
4522	4822 051 10008	0R Jumper 1206
4523	4822 051 20008	0R Jumper 0805
4524	4822 051 10008	0R Jumper 1206
4525	4822 051 10008	0R Jumper 1206
4526	4822 051 20008	0R Jumper 0805
4528	4822 051 20008	0R Jumper 0805
4530	4822 051 20008	0R Jumper 0805
4531	4822 051 10008	0R Jumper 1206
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 10008	0R Jumper 1206
4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4550	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4552	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4555	4822 051 10008	0R Jumper 1206
4556	4822 051 20008	0R Jumper 0805
4557	4822 051 10008	0R Jumper 1206
4558	4822 051 10008	0R Jumper 1206
4559	4822 051 10008	0R Jumper 1206
4560	4822 051 10008	0R Jumper 1206
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 10008	0R Jumper 1206
4569	4822 051 10008	0R Jumper 1206
4572	4822 051 10008	0R Jumper 1206
4573	4822 051 20008	0R Jumper 0805
4574	4822 051 20008	0R Jumper 0805
4580	4822 051 10008	0R Jumper 1206
4593	4822 051 20008	0R Jumper 0805
4594	4822 051 20008	0R Jumper 0805
4601	4822 051 10008	0R Jumper 1206
4603	4822 051 10008	0R Jumper 1206
4604	4822 051 10008	0R Jumper 1206
4606	4822 051 20008	0R Jumper 0805
4607	4822 051 20008	0R Jumper 0805
4608	4822 051 20008	0R Jumper 0805
4609	4822 051 20008	0R Jumper 0805
4610	4822 051 20008	0R Jumper 0805
4611	4822 051 10008	0R Jumper 1206
4612	4822 051 10008	0R Jumper 1206
4613	4822 051 20008	0R Jumper 0805
4614	4822 051 20008	0R Jumper 0805
4615	4822 051 10008	0R Jumper 1206
4616	4822 051 10008	0R Jumper 1206
4617	4822 051 10008	0R Jumper 1206
4622	4822 051 10008	0R Jumper 1206
4623	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - AF5 BOARD

RESISTORS

4624	4822 051 20008	0R Jumper 0805
4625	4822 051 10008	0R Jumper 1206
4626	4822 051 10008	0R Jumper 1206
4628	4822 051 10008	0R Jumper 1206
4629	4822 051 20008	0R Jumper 0805
4630	4822 051 20008	0R Jumper 0805
4631	4822 051 20008	0R Jumper 0805
4632	4822 051 20008	0R Jumper 0805
4640	4822 051 20008	0R Jumper 0805
4641	4822 051 10008	0R Jumper 1206
4642	4822 051 20008	0R Jumper 0805
4643	4822 051 10008	0R Jumper 1206
4644	4822 051 20008	0R Jumper 0805
4645	4822 051 20008	0R Jumper 0805
4650	4822 051 20008	0R Jumper 0805
4651	4822 051 20008	0R Jumper 0805
4652	4822 051 20008	0R Jumper 0805
4653	4822 051 20008	0R Jumper 0805
4657	4822 051 20008	0R Jumper 0805

COIL & FILTERS

5501	4822 157 11477	Fixed Inductor 2µ2 50%
5502	4822 157 11477	Fixed Inductor 2µ2 50%
5503	4822 157 11477	Fixed Inductor 2µ2 50%
5504	4822 157 11477	Fixed Inductor 2µ2 50%

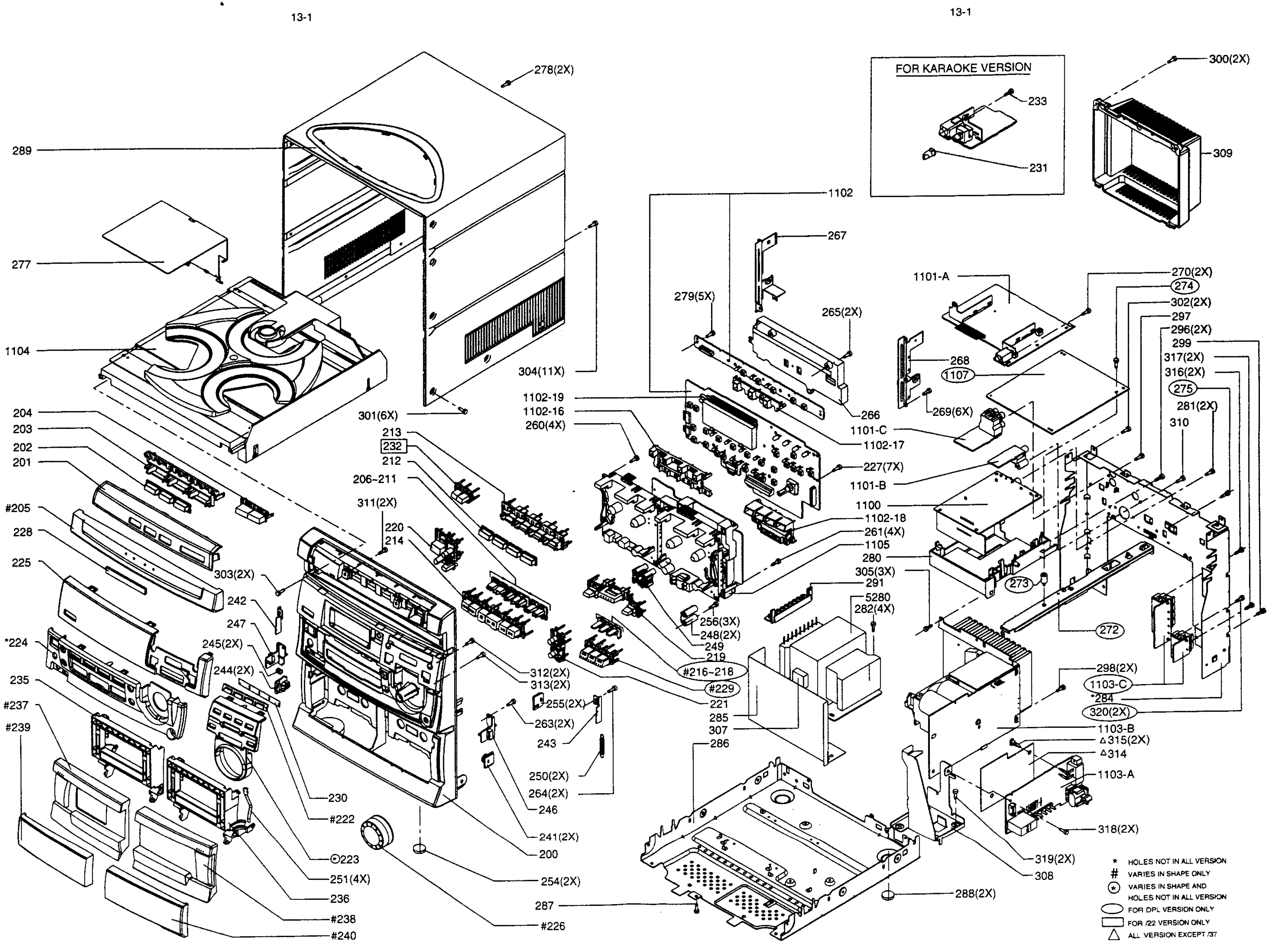
DIODES

6501	4822 130 30862	BZX79-B9V1
6503	4822 130 30862	BZX79-B9V1
6504	4822 130 30621	1N4148
6510	4822 130 31878	1N4003G
6511	4822 130 31878	1N4003G

TRANSISTOR & INTEGRATED CIRCUITS

7501	4822 209 31378	NJM4556MB
7502	4822 130 42804	BC817-25
7503	4822 130 42804	BC817-25
7504	4822 130 42804	BC817-25
7505	5322 130 42755	BC847C
7507	4822 209 83357	NJM4560M
7511	5322 130 42755	BC847C
7512	5322 130 42755	BC847C
7513	5322 130 42755	BC847C
7514	5322 130 60508	BC857B
7515	4822 130 41246	BC327-25
7516	5322 130 42755	BC847C
7517	5322 130 42755	BC847C
7518	5322 130 42755	BC847C
7519	5322 130 42755	BC847C
7520	5322 130 42755	BC847C
7521	5322 130 42755	BC847C
7522	5322 130 42755	BC847C
7553	4822 209 33652	TEA6321T/V1

Note : Only the parts mentioned in this list are normal service spare parts.



13-1
13-1
FOR KARAOKE VERSION
233
231
300(2X)
309
278(2X)
289
277
1104
304(11X)
301(6X)
1102
267
279(5X)
265(2X)
266
1101-A
268
269(6X)
1107
270(2X)
274
302(2X)
297
296(2X)
299
317(2X)
316(2X)
275
281(2X)
310
1102-19
1102-16
260(4X)
1101-C
1102-17
227(7X)
1101-B
1100
1102-18
261(4X)
1105
280
305(3X)
291
5280
282(4X)
273
272
204
203
202
201
#205
228
225
*224
235
#237
#239
213
232
212
206~211
311(2X)
220
214
303(2X)
242
247
245(2X)
244(2X)
256(3X)
248(2X)
249
219
#216~218
#229
221
312(2X)
313(2X)
255(2X)
263(2X)
243
250(2X)
264(2X)
246
241(2X)
200
254(2X)
287
#226
230
#222
223
251(4X)
236
#238
#240
285
307
286
298(2X)
1103-C
*284
320(2X)
1103-B
315(2X)
314
1103-A
318(2X)
319(2X)
308
288(2X)

* HOLES NOT IN ALL VERSION

# VARIES IN SHAPE ONLY

⊛ VARIES IN SHAPE AND HOLES NOT IN ALL VERSION

⬭ FOR DPL VERSION ONLY

▭ FOR /22 VERSION ONLY

△ ALL VERSION EXCEPT /37

PCS 100 075

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

200	4822 459 04889	Cabinet Front
201	4822 450 10442	Window CDC
202	4822 410 11645	Button Set CDC
203	4822 464 10372	Frame Button Set CDC
204	4822 410 11646	Button Set Open/Close
205	4822 442 01226	Cover Tray CDC /37
205	4822 442 01246	Cover Tray CDC /21/21M/22
212	4822 410 11647	Button Set Source Select
213	4822 464 10373	Frame Button Source Select
214	4822 410 11648	Button Set Control
219	4822 410 11649	Button Set DSC/DBB 1
220	4822 410 11651	Button Set Power
221	4822 410 11652	Button Set PROG/HSD
223	4822 426 10582	Panel Control DSC1
224	4822 454 13276	Orn Display /37
224	4822 454 13285	Orn Display /22
224	4822 454 13305	Orn Display /21/21M
225	4822 454 13277	Window Display /21/21M/37
225	4822 450 10455	Window Display /22
226	4822 410 11697	Knob Volume
228	4822 454 13265	Badge (Ph-Mag) Assembly /37
228	4822 454 13035	Badge Philips /21/21M/22
231	4822 410 11595	Knob Karaoke /21/21M
232	4822 410 11698	Button RDS/NEWS /22
235	4822 443 10488	Door Cassette Right
236	4822 443 10487	Door Cassette Left
237	4822 442 01227	Cover Cassette Left
238	4822 442 01228	Cover Cassette Right
239	4822 381 11937	Lens Cassette Left
240	4822 381 11938	Lens Cassette Right
241	4822 529 10322	Damper Assy
244	4822 402 10621	Push-Catch
245	4822 492 11344	Spring Compression
250	4822 492 11345	Spring Tension
251	4822 492 42787	Spring Cassette
254	4822 462 40683	Plate (Foot)
288	4822 462 40683	Plate (Foot)
289	4822 426 10583	Cabinet Rear
309	4822 442 00576	Cover Rucksack
315	4822 466 93148	Spacer 5mm
350	4822 445 10721	LS Pair To Left /37
350	4822 445 10722	LS Pair To Right /37
350	4822 445 10732	LS Pair To Left /21/21M/22
350	4822 445 10733	LS Pair To Right /21/21M/22
351	4822 320 11094	FM Aerial /37
351	4822 303 50063	FM Aerial /21/21M/22
356	4822 219 10429	Remote Control /37
356	4822 219 10446	Remote Control /21/21M/22
384	4822 303 50082	AM Frame Aerial
385	4822 321 10882 △	Mains Cord /37
385	4822 321 10249 △	Mains Cord /21/21M/22
387	4822 736 15908	instruction For Use /37
387	4822 736 15935	Instruction For Use /22
387	4822 736 15971	Instruction For Use /21/21M
5280	4822 146 10778 △	Mains Transformer /37
5280	4822 146 10783 △	Mains Transformer /22
5280	4822 146 10633 △	Mains Transformer /21/21M

Note : Only the parts mentioned in this list are normal service spare parts.

SCREW LISTS - MAIN UNIT

227	D3 x 12
233	D3 x 12
256	D3 x 30
260	D3 x 12
261	D3 x 30
263	D3 x 12
264	D3 x 12
265	D3 x 12
269	D3 x 12
270	D3 x 10
278	M3 x 10
279	D3 x 12
281	D3 x 12
282	M3 x 6
287	M3 x 10
296	D3 x 12
297	D3 x 12
298	M3 x 10
299	D3 x 10
300	M3 x 6
301	M3 x 10
302	D3 x 10
303	D3 x 10
304	M3 x 10
305	M3 x 6
310	D3 x 12
311	D3 x 10
312	D3 x 10
313	D3 x 10
316	D3 x 12
317	M3 x 6
318	M3 x 6
319	M3 x 6